

THE ARMY AIR FORCES
IN WORLD WAR II



GENERAL OF THE ARMY HENRY H. ARNOLD

THE ARMY AIR FORCES

In World War II

Volume One

PLANS AND EARLY OPERATIONS

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TO THOSE
WHO DID NOT COME BACK

FOREWORD

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IT HAS become a truism that no war in history was so well reported as that which the United States entered on 7 December 1941. The reference is, of course, to the legion of correspondents, radio broadcasters, and feature writers who chronicled its daily progress. With equal appropriateness, the judgment might be referred to less widely publicized efforts to provide a more permanent historical record. Surely no such concerted effort has ever been made by the historical profession in America as that which was carried out under the auspices of the various armed services and of civilian governmental agencies during the war years.

Of the appropriateness of such an effort the editors of this history, whether as professional historians or as citizens, can have little doubt. Twice within a single generation the country has been forced into a world conflict; in each case the major enemy was the same, but, as the second war opened, no adequate record of the experiences of the first had as yet been provided for either official or public use. The need for a history has seemed especially urgent in the case of the Army Air Forces. Younger than the other military arms, it had in 1941 barely outlived its growing pains. It had no tradition of historical scholarship within or without the service—no Mahan or Freeman. Much of what had been written about the Air Service in World War I had been episodic, personalized, apologetic. Authors who popularized the idea of air power were not trained historians: between the wars they wrote of the future; during the recent conflict they had no choice but to draw their conclusions from incomplete evidence. Today a considerable portion of the American public is air-minded, but amid discussion of the role of air power in plans for national security there exists no balanced synthesis of available knowledge of modern aerial warfare to which that public can turn. It is in an attempt to satisfy this want that the present work has been undertaken.

One of the better histories of the Air Service, AEF, is prefaced with the statement that “the primary purpose of this book is to

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demonstrate the necessity of a preparedness program for our air force." * The present history has no such dogmatic aim. Its authors believe with one of the wisest military leaders of our generation that "in our democracy where the government is truly an agent of the popular will, military policy is dependent on public opinion" and that the historian can render "the most essential service in determining the public policy relating to National Defense." But they have taken to heart also his warning that historians "have been inclined to record victories and gloss over the mistakes and wasteful sacrifices" and that "it is very important that the true facts, the causes and consequences that make our military history, should be matters of common knowledge." † The present authors make no claims to have succeeded in following this counsel of perfection, but they have tried to set down as they have understood it the story of the Army air arm for the people to whom that arm belongs.

This book, then, may be considered as a final report to the American public on the activities of the AAF in World War II. It is not an official report in the ordinary sense of that term—one to which the Air Staff necessarily subscribes in all its details and final conclusions. Rather it is the report of a group of professionally trained historians who during the war enjoyed an unusual opportunity for access to the files of the AAF while those files were still active, and who since the termination of hostilities have received the co-operation of Headquarters, United States Air Force, in plans to provide for the American public a comprehensive account of their findings. It is pertinent, therefore, to include here a brief account of the historical program of which this history is an end product and to tell something about the background of the book and its authors.

After the United States entered World War II, the Army Air Forces was among the first organizations to display an active interest in maintaining a historical record. The first hectic months after Pearl Harbor left little time in a military headquarters for consideration of anything beyond the ways and means of meeting each successive emergency call. But in June 1942 the Chief of the Air Staff directed that a professional historian be secured for the preparation of "a run-

* H. A. Toulmin, *Air Service, AEF, 1918* (New York, 1927), Foreword, p. v.

† "National Organization for War," an address before the joint meeting of the American Military Institute and the American Historical Association, Washington, 28 Dec. 1939, in *Selected Speeches and Statements of General of the Army George C. Marshall*, ed. Maj. H. A. DeWeerd (Washington, 1945), pp. 35-39.

ning account of Army Air Forces participation in all military actions in all theaters." The implementing directive contained the judgment of a young Air Corps general: "It is important that our history be recorded while it is hot and that personnel be selected and an agency set up for a clear historian's job without axe to grind or defense to prepare." *

This action was followed in July by a directive from the War Department calling for the appointment by AAF Headquarters of a historian in accordance with the President's express desire for an administrative history of all war agencies. To the Historical Division, established during the summer in the Office of the Assistant Chief of Air Staff, Intelligence, there consequently was assigned a twofold responsibility for the preparation of an organizational and an operational history of the Army Air Forces.

Responsibility for decisions involving professional questions fell initially, and indeed throughout the war chiefly, on Col. Clanton W. Williams,[†] who reported in September 1942 for duty with the Historical Division on military leave from the University of Alabama. Under Col. Clarence B. Lober as military chief until January 1944 and from the spring of 1945 under Col. Wilfred J. Paul, Colonel Williams served in a capacity at first officially described as that of Professional Executive, later of Chief, and still later of AAF Historian. Whatever the official designation, he rightly saw his job to be that of interpreting professional needs and standards for the guidance of his military superiors in order to assure continuing and intelligent support for a type of operation that fell into no familiar category of military functions. In the academic world he would have been called a dean, for he undertook to build a staff of professionally qualified men and to provide for them conditions favorable to work that would meet the highest professional requirements. And though, like most deans, he found little time for scholarly work of his own, to his administrative skill and courage the accomplishment of the AAF Historical Program must be largely credited.

At the time of Colonel Williams' assignment to the Historical Division, Maj. Harold J. Bingham was already engaged in the organization of a program for the coverage of AAF activities within the Zone of

* R&R, Brig. Gen. L. S. Kuter, AFDAS to AFMOP, 19 July 1942.

[†] For the ease of the reader the highest-attained rank of military personnel is used in this Foreword.

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the Interior. The Administrative History Branch, which he headed throughout the war, would retain in its title the emphasis fixed by the President's directive for the preparation of administrative histories by war agencies, but the responsibility of the branch actually included comprehensive study of all phases of the AAF's continental, as distinct from its overseas, activities. It was Colonel Williams' hope that he might himself assume the major responsibility for coverage of overseas operations, and in the fall of 1942 he spent two months on temporary duty in England, where, in addition to studying the practical problems to be met in covering an overseas air force, he drew heavily upon the experience of the well-established historical section of the British Air Ministry. To Mr. J. C. Nerney on this and other occasions, and as well to historical officers of the Royal Air Force, the Royal Canadian Air Force, the Royal Australian Air Force, and the Royal New Zealand Air Force, with whom AAF historical personnel were associated in the study of combined air operations, there is due an acknowledgment of a variety of courtesies extended. After returning to Headquarters at the close of 1942, Colonel Williams found the pressure of a growing administrative burden such that in the fall of 1943 he turned over to a newly established Operational History Branch, headed by Lt. Col. Wesley F. Craven, much of the responsibility for coverage of overseas operations. In August 1945 the Historical Division was removed from Intelligence and given the status of a special staff office.

The proportions of the task which had been assigned to it were staggering. By the close of 1942 there were already twelve air forces, eight of them engaged in widely scattered overseas operations, while in this country the training and service commands alone dwarfed most organizations theretofore known to American military history. Eventually there would be sixteen separate air forces whose several operations extended literally around the world, not to mention the Air Transport Command, which pioneered in the development of the first world-wide system of air transport. The rapidly accumulating records of this varied activity were not only massive; they were also scattered. The basic problem was to devise some scheme of selection that would permit the assembly in usable form of that part of the record which had clear historical significance and at the same time, paradoxically, to supplement the record by capturing and recording experiences that otherwise would be lost. Basic also was the factor of

time. The job had to be accomplished within the limits of an indeterminate number of months or years. No one could predict the actual duration of the war, but it was clear that at its end, or soon thereafter, the historian must be prepared to bring to a close at least the preliminary selection and arrangement of his materials. It was hoped, to be sure, that he would have an opportunity after the termination of hostilities for more intensive study. But there was no escape from the practical necessity of distinguishing between a war and a postwar phase of the effort, and unavoidably the emphasis during that first phase fell on the selection and collection of the materials themselves.

It being difficult to lay down principles of selection that were universally applicable, the decision was made to rely principally on the judgment of professionally trained historians strategically placed at key points of command. The first of those points, of course, was AAF Headquarters itself. Though the Army Air Forces legally was no more than a training and service organization operating within the limits of this country, its headquarters, as will be demonstrated later, was actually the nerve center controlling in large measure the entire war effort in the air. And so, personnel of the Historical Office undertook, each historian working in his own area of specialization and by research initially in Headquarters files, to draw together as comprehensive a record of the air effort as was physically possible within the time limits operating and, while condensing this record into some readily usable form, to treat it with a breadth of view appropriate to the highest echelon of command. At the same time, and for the purpose of supplementing Headquarters files with a selection from records of action available only in the area of that action, an attempt was made to secure the assignment of qualified historical personnel to the headquarters staff of each air force and command. The responsibility of the historian so assigned was twofold: to act, first, as the historian of his command for the purpose of recording its activities from the point of view of its own headquarters and, second, to provide such professional guidance as he could for those officers and enlisted men of the various units comprising the command who, in addition to their other duties, were charged with the preparation of the unit history. The unit history had long been required by Army regulations, and the effort of the Historical Office in that particular was directed chiefly to the establishment of standards that would lend to it greater historical value. Thus the policy became essentially that of placing profession-

ally qualified historians at those points in the chain of command at which the record tended to find a natural consolidation and through their services to raise the standard of already established procedures of historical reporting.

In the establishment of its own procedures the Historical Office came to rely chiefly on the preparation of a historical narrative or monograph, depending upon the nature of the subject, and the attachment thereto of copies of documents of outstanding importance. The latter practice was usually dispensed with in the office itself, where the documents used presumably would be available again in conveniently accessible files and exact citation in the study, with an occasional appendix, would provide the assistance needed by a historian having reason to go back over the ground. But, in developing a system of historical reporting from other headquarters, the "supporting documents" received an emphasis equal, generally speaking, to that placed on the narrative itself. The narrative was designed to serve as a means for supplementing the record and at the same time as a device for reducing it to some readily usable form. It was also regarded as serving the purpose of a guide to the larger record from which it had been drawn. And, until an opportunity for fuller study was offered, it would serve as an interim history. The term "first narrative," borrowed from the RAF, was frequently used to describe it.

It will be evident from the foregoing that the Historical Office interpreted its wartime assignment to be that not so much of preparing a history in the proper sense as rather of selecting, assembling, and organizing for immediate and subsequent use a comprehensive but physically manageable historical record. Vital to the fulfilment of its mission, therefore, was the organization of its own historical files as a central depository for the narratives, monographs, unit histories, and other documentary materials forwarded through channels by the several headquarters. Under the supervision of Lt. Col. Bayrd Still as chief of the Sources and Editorial Branch, the files became with the passing of time an increasingly rich collection for study of the air war. Its organization presented a problem of peculiar difficulty, for the materials in order to serve their purpose had to be put to immediate use by researchers and writers. As the flow of historical reports from the theaters and subordinate commands increased, studies prepared by the Historical Office itself were marked by an increasing balance and completeness of coverage. Of these AAF Historical Studies, for the

final form and production of which the Sources and Editorial Branch also assumed responsibility, approximately ninety had been completed by the summer of 1946. And since that time the Office of Air Force History has continued to prepare, under the direction of Dr. Albert F. Simpson as Air Force Historian, narratives and monographs designed ultimately to round out the many-sided story of the AAF.

During the later stages of the war the Historical Office enjoyed the assistance of a special advisory committee, consisting of Professors Richard A. Newhall of Williams College (chairman), Joseph R. Strayer of Princeton University, and John A. Krout of Columbia University. This committee offered helpful advice and counsel that proved to be of special value in the planning of this history.

Any brief account of the sort here attempted unavoidably reduces the problem to simpler terms than it actually presented to those who first faced it. The task was a new one and had to be undertaken without the benefit of any established tradition either in the Army Air Forces or in the other armed services as to the kind of history desired; necessarily the job was learned in the doing of it. Necessarily, too, the project was carried forward with by no means the highest priority in the hurried atmosphere of a military headquarters, and it depended for its support upon men who had a war to win before they could devote much time to the recording of it. The degree of interest shown naturally tended to vary as between one commanding general and another, a difference inevitably reflected in the accomplishments of the historical officer, but fortunately the Air Staff in Washington set for other commands a most helpful standard of policy. Two principles received its consistent support throughout the war: (1) that the job should be intrusted only to professionally qualified personnel and (2) that this personnel should have full access to all AAF records necessary to the accomplishment of its task. The historian was thus given a challenging opportunity, and in return he welcomed the increasing number of instances in which he had occasion to demonstrate the practical value of a well-ordered historical record to the immediate needs of the staff.

The procurement and assignment of qualified personnel was in itself a problem of no mean proportions. In keeping with established military usage, the preparation of each command's history became a command responsibility. The AAF Historical Office was limited, therefore, in the control it could exercise over historical activity in

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other headquarters, and this was especially true of the overseas organizations, where the chain of command normally ran from the commanding general of the local air force through theater headquarters to the Chief of Staff, U. S. Army. The Historical Office could use its influence to secure from the War Department authorization of vacancies for the job in tables of organization, it could offer its assistance in the procurement of qualified personnel for the vacancies so established, and it could make suggestions regarding desirable objectives and standards. But the final choice remained with the commanding general, who in some instances moved in advance of promptings from Washington to provide his own historical officer, and who in other instances elected to fill the vacancies established by selection from his own staff. In most cases, however, the offer of professional assistance from AAF Headquarters was welcomed, though occasionally the official request for such aid came late. The first historians selected by the Historical Office for overseas service reached their stations only in late 1943, and with most of them the time of arrival fell in 1944. Within the Zone of the Interior, where the chain of command ran down from General Arnold, the establishment of historical sections had proved to be a less time-consuming effort. Even so, there were limits arising from the old and generally sound principle of command that a superior gives his subordinate a job to do but leaves it to him in large part to determine how best it can be done.

The finding of available personnel possessed of the desired qualifications was still another matter. Though civilians were heavily relied upon in the Historical Office and at points elsewhere in the Zone of the Interior, most of the key assignments required use of military personnel. Opportunities for commissioning historians direct from civilian life being limited and at an early date entirely eliminated, it was necessary to rely upon qualified personnel already in the Army; and, since other branches had use for their own historians, the choice actually came to be limited to the rosters of the AAF. Fortunately, a considerable number of men possessed of advanced training in history or closely related fields had volunteered at an early stage of the war effort for service with the Army Air Forces, and they had played an especially significant part in the development of the AAF training program. As that program passed its peak in 1943, an increasing number of those men became available for reassignment to the historical program. Being of military age, they were for the most part young

men whose professional training or career had been interrupted by the war. What some of them may have lacked in the way of professional experience or polish found compensation in their energy and the substantive knowledge acquired during their previous AAF assignments. It is hoped that the following history may prove to be of a quality in keeping with the contribution they have already made to it.

It was not within the power of the Historical Office to assure for each and all of them the full access to records and the freedom of interpretation that are fundamental to the proper exercise of the historian's function. But the degree of co-operation received by historical officers was on the whole encouraging, and authority was secured at the close of hostilities to bring into AAF Headquarters certain of the field personnel for the purpose of completing their assignments in as close an association with the personnel of the Historical Office as was possible. This authority included provision for the temporary transfer to Headquarters of such documents and files as the historian considered necessary for the completion of his task. At this stage of the project it also proved possible to enlist the aid of several key operational and intelligence officers whose firsthand knowledge of major operations provided a valuable supplement to the documentary record.

Many adjustments to practical necessity had to be made in the original plan. For completeness of coverage it was necessary in the case of overseas operations to depend chiefly upon narratives prepared in the Historical Office itself for the first two years of the war and, conversely, to rely principally upon the work of the overseas historical officers for the story of later operations. But, when with the summer of 1946 the bulk of the historical personnel had returned to their normal civilian activities, there existed in the files of the Historical Office some narrative account or organized documentary record covering all periods and areas of the AAF's overseas operations and its major activities within the Zone of the Interior. Inevitably there were subjects requiring more intensive study, narratives in need of revision in the light of new evidence, and a multitude of monographic topics for which there had been no time. But a balanced history of the AAF in World War II, drawn from the more pertinent records, had been brought within reach.

Unavoidably the chief concern of the AAF Historian in the early months had been to build his organization, select his men, and get them into the field that they might begin the steady flow of materials home-

ward. But from an early date the Historical Office gave increasing consideration to the definition of its ultimate objectives. Among these, first place was given to the preparation of a comprehensive history of the AAF's war activities, to be written when victory would release security controls. In the winter of 1943-44 the conviction was reached that this history should not be conceived as the sum of the histories of separate air forces and other major components bound only by the physical format of a single work but rather as the story of our national effort exerted through the Army air arm against determined foes in widely scattered regions. It should be scholarly in tone, should be addressed to those readers who have a serious interest in the study of the air war, and should be of a length appropriate to the magnitude and complexity of the subject but should not overlook certain human limitations that presumably would govern both the author and the reader. Such, at any rate, was the decision ultimately reached, and seven volumes more or less arbitrarily came to be settled upon as a practical compromise.

In intervals of relief from assignments of more immediate urgency the office worked at an outline, which, though always tentative in nature, began to take definite shape as the war in Europe drew to a close. In September 1945 both the proposal and the suggested outline were approved in principle by the civilian Advisory Committee and soon thereafter by the Air Staff. Since V-J Day the project, under the weighty title of "The Seven Volume History," had enjoyed a No. 1 priority in the Historical Office. But there remained the practical problem of translating the plans into actuality.

The importance of the story to be told and the wealth of archival materials available suggested that a mature historian of outstanding abilities be invited to undertake the task; informal caucusing for a possible "Mahan of air power" became a favorite lunchtime occupation. But it was realized that, even in the unlikely event a distinguished scholar could be lured from his own special interests, a seven-volume history would constitute a lifetime assignment—the RAF's history of World War I, done in similar fashion and on a comparable scale, had been finished only in 1937. It was eventually accepted that a seven-volume work could be completed within a reasonable length of time only as a co-operative venture. And it was not inappropriate that the final product should be a group enterprise. Inevitably the history must bear the stamp of the field historians and of the legion of men who,

as additional duty and without so much as the conventional reward of a "without-whose-aid" acknowledgment, had labored over a unit history. In a very real sense it would be the work of a busy adjutant of a fighter group in Italy or of a pfc sweating out the war in an AACS station in the sub-Himalayas as well as of the authors who provided the final interpretation.

At the suggestion of the Advisory Committee, the Historical Office invited the present editors to assume responsibility for securing such a history as had been envisaged. This offer, after some hesitation which was far from being mere formal demur, they accepted: reluctance to extend an already overlong absence from their respective scholarly interests was outweighed by the challenge of the opportunity and the desire to see the program carried through to fruition. The acceptance was under condition that the editors, after their return to civilian status, be allowed to produce the book in their own way, with such material assistance as the Historical Office could render. That condition, accepted alike by the office and the Air Staff, has been lived up to in letter and in spirit.

Further study of ways and means for the accomplishment of the task indicated that, of the AAF historical personnel who were willing to make an additional commitment of their time, all except a few planned a prompt return to their academic posts. It seemed an appropriate and helpful step, therefore, to seek sponsorship for the project from some academic institution which would assume the heavy responsibility for guaranteeing publication of the finished work. In December 1945 the editors, with the sanction of the Air Staff, opened negotiations with the Chancellor of the University of Chicago. The University, expressing interest in a military history "written without suppression or distortion of significant facts," agreed to sponsor the project on the understanding that the authors would be given access to all pertinent documents and would enjoy perfect freedom of interpretation. These conditions—without which indeed neither authors nor editors would have undertaken the assignment—had obtained in the Historical Office during the war in respect to studies done for the Air Staff itself and bearing a high security classification. The editors have felt a certain degree of organizational pride that the Air Staff accepted, and has scrupulously observed, the principle that this custom be extended to a work designed for public circulation.

Further, it has been agreed that no royalties will be paid to the

editors or to the contributors to this and succeeding volumes and that the sum thus saved will be used to reduce the sale cost of each volume.

And now a few words about the authors. For obvious reasons they were chosen from the staff which had been engaged in the program during the war. They bring to their respective assignments, then, a familiarity with the problems, the personalities, and the sources gained in several years of research, often at the headquarters most intimately concerned. Several were civilian employees of the Historical Office in Washington, but for the most part they were officers who had served in the Air Staff there, in a Zone of the Interior command, or in a theater of operations. It would be naïve to suppose that their interpretations have been unaffected by their military experiences. But the authors, like most members of the wartime Army, were civilians in uniform rather than professional soldiers. In all cases the period of academic training and practice exceeded in length that of military indoctrination and service; the authors were citizens and taxpayers before, and after, their tour of military duty, and they have felt called on to write no official apologia. Service loyalties they undoubtedly carried with them in returning to their academic posts, but not to the degree that their critical faculties have been submerged. They have written as present scholars rather than as former Air Corps officers.

Of the individual contributors to this volume, the following biographical facts are pertinent. Maj. James L. Cate, as a member of the staff of the Historical Office, devoted his attention chiefly to the problems of strategic bombardment and after June 1944 served as historical officer of the Twentieth Air Force. Miss Kathleen Williams' research and writing, done under the immediate direction of the chief of the Operational History Branch, ranged over varied fields of AAF organization and operation according to the immediate need of the moment. Maj. Richard L. Watson for three years carried the main responsibility in the office for the Southwest Pacific; Maj. Kramer J. Rohlfleisch held a similar responsibility for the remainder of the Pacific; and Maj. Herbert Weaver bore the responsibility for the China-Burma-India theater. Capt. William A. Goss served as historian with the Fourth Air Force and was subsequently brought into AAF Headquarters for study of continental air defenses. Lt. Arthur B. Ferguson divided his attention between antisubmarine operations and the Combined Bomber Offensive. Capt. John D. Carter served first as historian of the Caribbean Division, Air Transport Command, and after that at Headquar-

ters, ATC. Capt. Alfred Goldberg, after working on the histories of the VIII Air Force Service Command and Air Service Command, USSTAF, was assigned to Headquarters, USSTAF.

Finally there remains something to be told about the history itself. The title is descriptive of its scope. It is not a complete history of the Army air arm, since it covers in detail only a four-year period. Nor is it a complete history of those war years, since it deals as exclusively as possible with activities of the AAF. This is through no childish fancy that the AAF won the war single-handed. Victory was possible only through the combined efforts of the several arms of the associated powers and of the civilians behind those arms. But to tell the story of the AAF's share in the air war is itself a heavy assignment, and the authors have dealt with the operations of other services and nations only as they impinged directly upon those of the Army Air Forces.

This volume constitutes, according to present plans, the first of seven. It deals first with the Army air arm before 7 December 1941 and more intensively with its fortunes during the first eight or ten months of the war. For that period of defeat, retreat, small-scale operations, and frenzied preparation, it has been found convenient to describe under a single cover AAF activities in every theater. With the beginning of the offensive in late 1942, limited at first but swelling in intensity as men and material were made available, the story becomes in effect that of two large-scale wars waged simultaneously, intimately connected by highest strategy and the allocation of forces but tactically independent. Hence it has been thought best to avoid a strictly chronological account, treating the air war against Germany and Italy in Volumes II and III, against Japan in IV and V. Throughout, an effort has been made to relate operations in the several theaters through discussion of pertinent strategical and logistical plans developed by the Joint and Combined Chiefs of Staff. Similarly, problems of the Zone of the Interior—organization, production, training, transportation, and the like—have been treated briefly wherever necessary for an understanding of combat operations. But these problems have seemed so important—indeed to the degree that one may find the main clue to our victory in American manpower and production—that the whole of Volume VI will be devoted to activities on the home front. The final volume will include an account of the world-wide services of the Army Air Forces, such as the Air Transport Command and Army Airways Communications System, and of the handling of problems which

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were common to all theaters—health, morale, etc. Thus, though the seven volumes are planned as a unified whole, certain volumes or combinations of volumes are to a certain degree discrete segments—as I, II, and III, or I, IV, and V, or VI by itself.

Certain matters of form require brief explanation. Considerations of space have kept the detail of footnote citations, which appear at the end of the volume, to a minimum. Except where the file number or other evidence of physical location is an indispensable part of the citation, no attempt is made to locate the document. Similarly, the subject in letters, memoranda, and other forms of military correspondence usually has been omitted. In view of the multitude of documents that must be cited, the very limited number of them that for some time will be available for use of scholars outside official agencies, and the fluid state in which official files are kept, it has seemed that documentation for the purpose primarily of indicating the authority for statements made would serve as a practical and useful compromise. The work is based chiefly on the files of the United States Air Force and especially on materials now filed with the Office of Air Force History. Scholars accredited for research in official papers will find additional assistance by reference to the fully documented AAF Historical Studies.

The problem of providing maps for a text of this sort has presented its own peculiar difficulties. AAF operations were literally world-wide in their scale and hardly less so in the early than in the later stages of the war; even when some smaller segment of the story is presented, such is the range of an airplane that the cartographer's task becomes chiefly that of showing relative positions and distances within areas of vast extent rather than depicting the few hundred square yards so frequently pertinent to an immediate situation in ground operations. Moreover, the variety of air force combat operations, not to mention other activities on the ground and in the air, multiplies greatly the place names mentioned in the text. The choice tends, therefore, to become one between a reference map, which by its very lack of emphasis serves little or no illustrative purpose, and a map that is frankly illustrative in character. In facing such a dilemma, the editors have felt that there was no choice but to use maps designed primarily for illustration of the text, and, where additional detail would diminish or destroy the illustrative value of the map, they have not hesitated to leave it out. The reader will find any standard atlas a useful supplement to the text, but the editors have not felt called upon to provide still

another atlas. The end sheets provide a general map of the world. Within any given geographic area, the several maps scattered through the text complement one another.

In most matters of style this volume follows War Department usage. Dates, unless in quotation, are given thus: 7 December 1941. Time is by the twenty-four-hour system (i.e., 1300 for 1:00 P.M.) and is zone (local) time unless otherwise indicated. Military rank is normally given as of the period concerned. The AAF, like the other military arms, has developed its own language—a compound, formidable to the uninitiate, of technical terms, code words, abstruse abbreviations, slang, administrative jargon, and clichés. Because this book is written in the hope of reaching as wide an audience as possible, some effort has been made to translate that language into a more widely used tongue. Perhaps the clichés are hardest to eradicate; it is a pity that too much of The Adjutant General's phrasing has crept in and too much of the saltier idiom of the hangar line has been deleted. Technical language has been avoided where possible, but there is no exact synonym for "intervalometer," and the best short expression for a P-47N is P-47N. Code names are used freely, and alphabetical symbols, because they save time and are less likely to clutter up a sentence than are the originals. In theory, at least, both code words and abbreviations are explained on first usage, but for convenience a glossary is appended.

In conclusion, the editors wish to acknowledge their heavy indebtedness to Col. Wilfred J. Paul and Dr. Albert F. Simpson of the Office of Air Force History, Headquarters, United States Air Force. Colonel Paul has at all times placed at our disposal a mature experience and technical knowledge derived from his service with the Air Corps and the Army Air Forces. He has prepared the way for our approach to other officers whose special experience promised an answer to troublesome questions. His office has served as the co-ordinating agency through which editors, authors, and publisher have found it possible to overcome many of the disadvantages inherent in a collaborative effort. And of even greater importance, he has offered the consistent encouragement of a keen and understanding interest in the history and the historian's own peculiar problems. To his unfailing assistance must be credited in large part the opportunity to carry through the project as planned. Dr. Simpson, who will appear as one of the contributors to later volumes, has stood by to provide the answers to unanticipated questions and to render aid in all other possible ways. The

editors have repeatedly drawn upon his counsel and special knowledge. In shaping the current studies of his staff with a view in part to the needs of this history, he has provided additional assurance of its completion in accordance with objectives set.

Individual acknowledgment is also due other members of the staff of the Office of Air Force History: Mrs. Estelle Cornette, Mr. P. Alan Bliss, Maj. Arthur J. Larsen, Capt. William A. Bennett, Capt. John W. Miller, Dr. Chauncey E. Sanders, Miss Juliette Abington, Lt. Col. Garth C. Cobb, and especially Mrs. Juanita S. Riner, Miss Fanita Lanier, and Mrs. Wilhelmine Burch. Mrs. Riner has supervised the typing, proofreading, and checking of the manuscript, tasks which are particularly troublesome in a co-operative history. Miss Lanier, who prepared the maps, end sheets, and dust jacket, has placed at our command technical knowledge and artistic imagination. Mrs. Burch has rendered valuable assistance in the attempt to bring the manuscript on questions of style and usage into consistency with both military and scholarly requirements. She has also taken the responsibility for reading the printer's proofs and preparing the index.

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Washington
5 December 1947

WESLEY FRANK CRAVEN
JAMES LEA CATE

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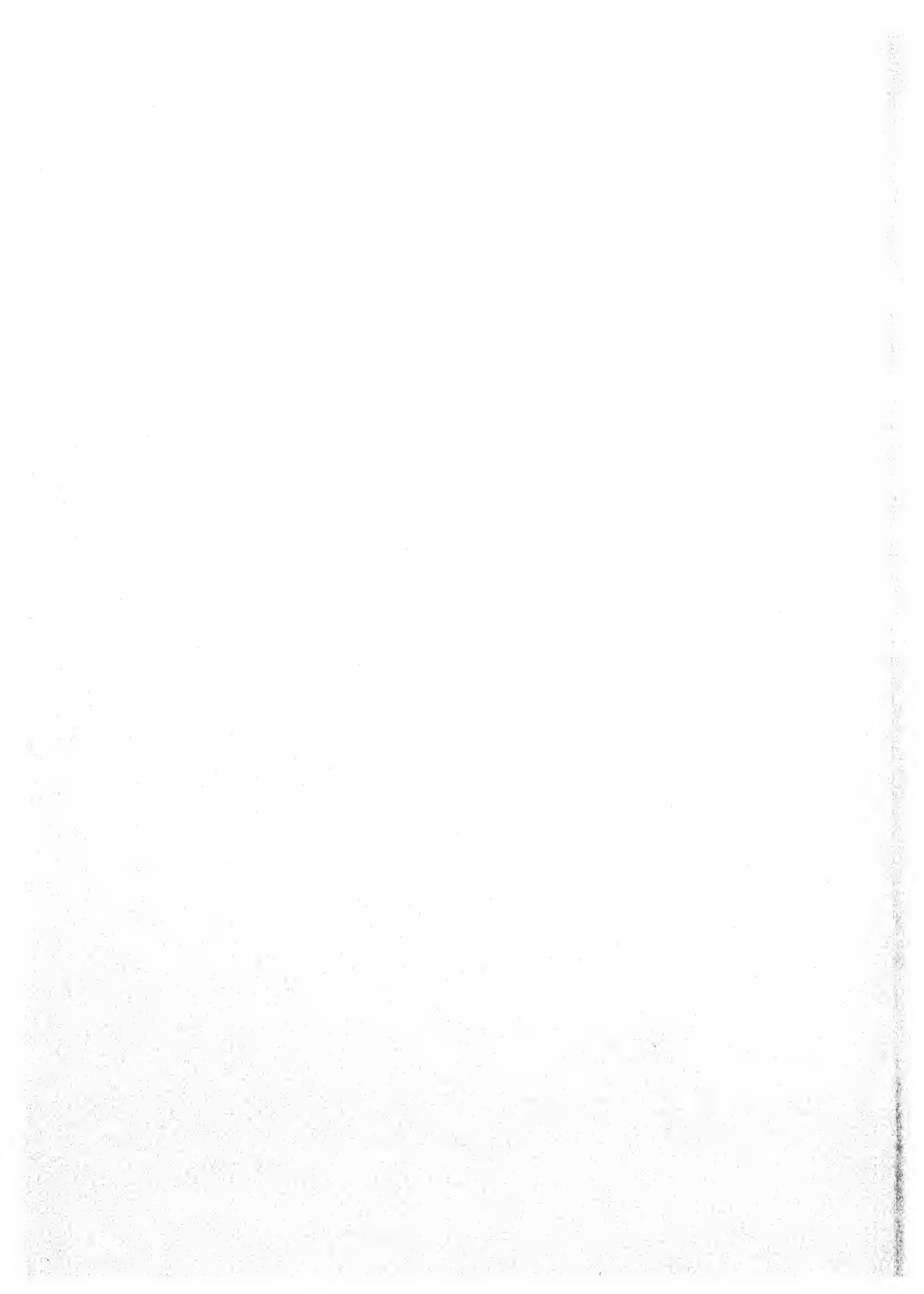
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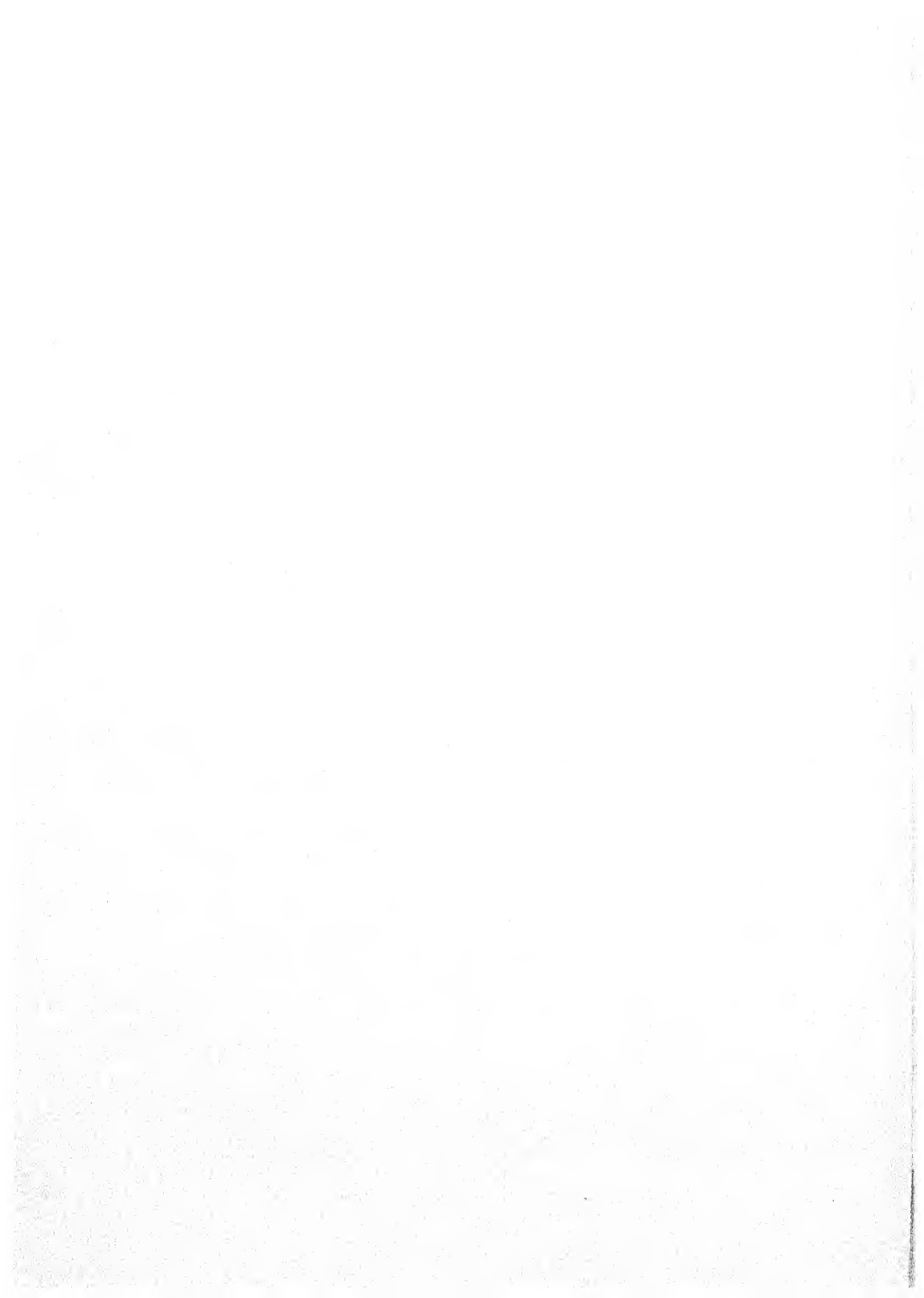
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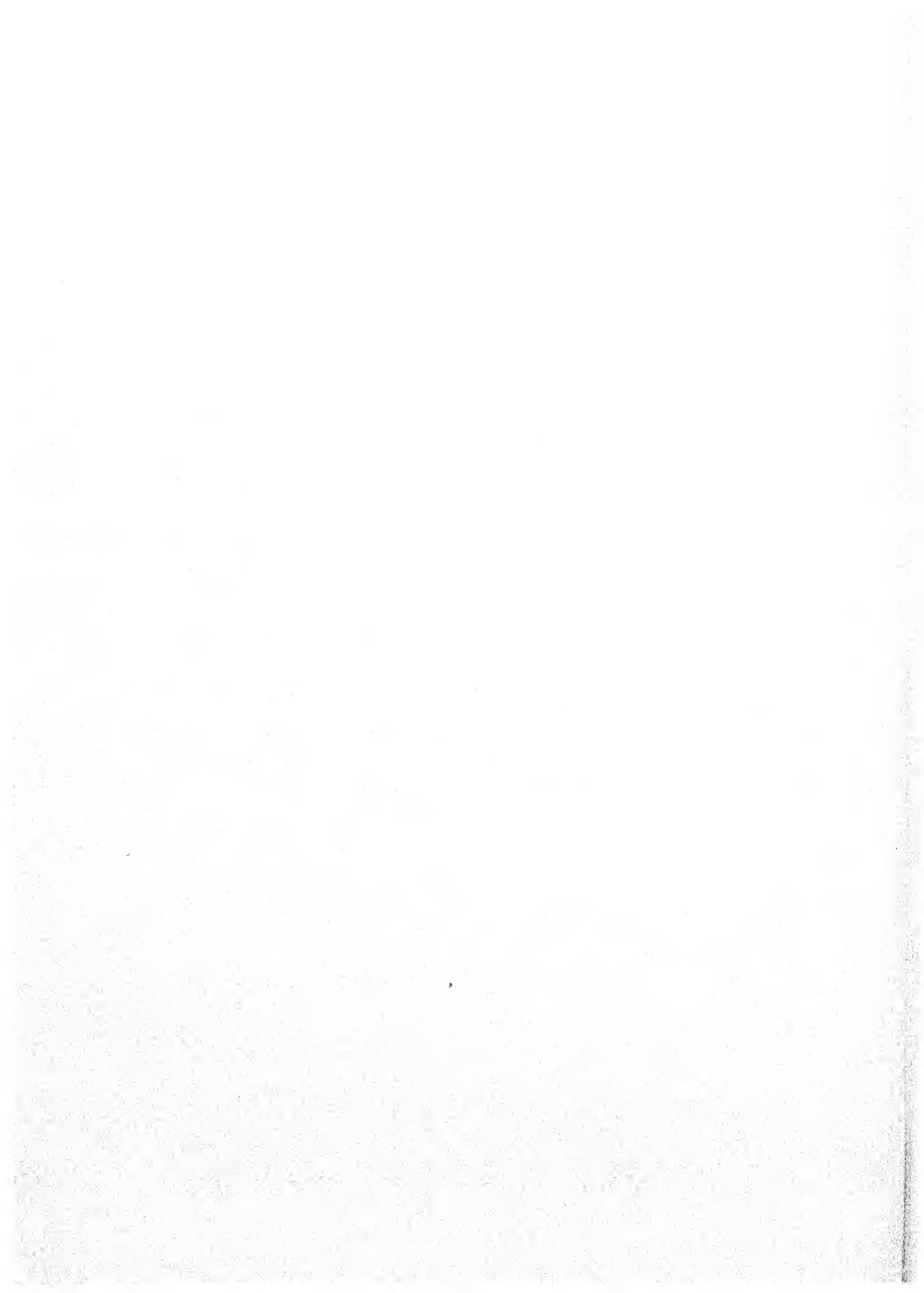
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SECTION I

* * * * *

THE EARLY HERITAGE



CHAPTER 1

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THE AIR SERVICE IN WORLD WAR I

ON THE morning of 7 December 1941 two Signal Corps privates were operating a mobile air warning set at Opana in the island of Oahu. At 0702 they picked up on the radar screen a large flight of aircraft approaching from the north. They tracked the planes in from 130 miles only to lose them as they neared the coast. At 0755 the planes, soon identified as Japanese, launched simultaneous attacks against Pearl Harbor and Hickam Field. Four days later Germany and Italy joined their Axis partner by declaring war against the United States.

The war ended, as it had begun, with an air attack—a single atom bomb loosed from a B-29 over Nagasaki on 9 August 1945. Between those two bombardment missions the Axis powers had been decisively defeated by the combined arms of the several United Nations. This is a history of the United States Army Air Forces in that war. The present volume carries the story to the end of the summer of 1942. The history does not begin with the abruptness of the surprise attack on Pearl Harbor. A more leisurely approach may lessen the drama of that Sunday morning but will make more intelligible the course of the war which followed.

This was the second time since the invention of the airplane that the United States had entered a major war as it approached a crisis. In the first instance there had been little psychological or material preparation. America's contribution to victory was late and hardly commensurate with national resources. During the long truce between the two conflicts the nation turned resolutely from thoughts of war, but by 1939 it began to appear that peace might not be had at a reasonable price. There followed two years of hurried rearmament; when war

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came, preparations were far from complete, and for months the United States fought on the defensive, pushed about by the Japanese in the Pacific and harried by German U-boats in the Atlantic. Before a year had run out, though, production and training programs initiated earlier were sufficiently advanced to support limited offensives in both the European and the Pacific theaters.

The history of the Army air arm during the period 1917-41 reflects, sometimes in exaggerated form, the general pattern set by the nation's military policies. Created virtually from whole cloth in 1917, the Air Service experienced a vast but tardy expansion. After a few months of combat in France came peace and, in 1919, rapid and thorough demobilization. Twenty lean years followed. National policy, in the interests of world peace and domestic economy, opposed a large and expensive military establishment; the air arm, as a junior member of the military team, suffered from lack of funds and personnel and enjoyed little control over its own fortunes. The period was not wholly sterile, however, and, when in 1939 the nation began again to gird for war, the expansion of the Air Corps was along lines conditioned by the experiences of two decades of peace as well as by those of World War I. And so, while the present volume deals largely with the air war which began at Pearl Harbor and Hickam Field, the operational narrative is prefaced by a brief account of the development of the Army's air organization in the quarter-century which followed the establishment in 1914 of the Aviation Section, Signal Corps, and by a more detailed description of the efforts made in 1939-41 to prepare the air force for war.

The present section, which deals with the early heritage of the Army Air Forces, is more in the nature of an interpretative essay than of a substantial history of the period. The intrinsic importance of those years for the development of American air power was sufficient to warrant serious study, but in a history of World War II no more than a rapid survey is appropriate. No effort is made here to present a well-balanced account of all phases of military aviation from 1914 to 1939 or to document fully and with equal regard for all points of view the story of those controversies which colored all air force activities during that era. Rather this and the following chapter purport to be no more than an attempt to sketch, in bold lines and from sources readily available, those salient features of aviation history which will help explain

the attitudes and convictions of the Army's airmen on the eve of their second war.

From Aviation Section to Air Service

The story of the Army air arm in World War I was one of promise rather than of achievement. The combat record was excellent, but brief and on a scale far more modest than the public had been led to expect. This explains why most of the official reports of the Air Service's war activities were compounded of statistics and apology. There is now little cause to wonder at the failure to make good the brave promises of 1917—indeed, but for their extravagance, the feebleness of the air effort might have received far less public criticism. But, in order to secure support for unprecedented appropriations, those in charge of military aviation, civilians and officers alike, made rash predictions. Probably their claims were inspired by inexperience rather than by an outright lack of candor, but they were wholly unwarranted; and, when the failure of the program became a matter of common knowledge, reaction was bitter. Reorganization was swift and effective, and, had the war dragged on into 1919, the boasts might have been made good, if somewhat tardily.

On 13 June 1917 a spokesman for the newly created Aircraft Production Board said for publication: "We believe we have worked out a program which will make it possible for the United States to secure to the Allies next year the permanent supremacy of the air, and with that we hope to become an immediate, decisive factor in ending the war."¹ The program to which he referred was, by existing standards, huge. It had been suggested to the United States government by French Premier Ribot in a cable received 26 May. Ribot had asked that the Americans place at the French front by 30 June 1918 a "flying corps" of 4,500 planes, 5,000 pilots, and 50,000 mechanics. As elaborated by officers of the Aviation Section, this program provided for a total of 22,625 aircraft, including 12,000 of the latest service models, and a training establishment equipped to graduate from primary schools 6,210 pilots.² Ribot had requested for the next spring campaign an air force larger by far than that which the French had been able to build in three years of war and wholly out of proportion, according to existing ratios of air to ground forces, to infantry troops then contemplated for the AEF. Perhaps the formidable demand was more than a tribute to American industrial capacity. It came close on the heels of

the British and French war missions to Washington, before any decision had been made as to what the American war contribution should be. Few in the United States as yet envisaged an expeditionary force of millions of men, and it is possible that the French, gauging the public attitude shrewdly, thought it easier to sell the idea of a war of machines.³ Certainly the deployment in France of a force of 4,500 combat planes would have entailed a more lavish use of aviation than had yet been employed in the close support of ground armies.

The new program, which immediately supplanted earlier modest estimates, called for an appropriation of \$640,000,000. The necessary legislation was pushed rapidly through Congress in the Aviation Act of 24 July 1917. The bill was passed without roll call—also without concurrence by the Army's General Staff, having been borne on a wave of public enthusiasm engendered by a high-powered publicity campaign. Slogans such as the "cloud of planes" and the "million roads to Berlin" became in anticipation concrete realities. Inspired news stories and editorials played on the speed and economy of life with which aviation could turn the scales against Germany; the capacity of America to fulfil the production, training, and tactical requirements was seldom doubted.⁴ As the *New York Times* put it editorially: "By no other means can we so quickly or so surely render valuable aid to our allies. . . . Airplanes can be rapidly built. . . . Money is all that is lacking."⁵ A few experts thought differently, though rarely for publication: that "no amount of money will buy time. Even the most generous preparations do not open up the years that have passed and enable us to carefully lay the foundations of a great industry and a great aerial army."⁶ Experience was to show the wisdom of this view.

Of all the requisites for air power, we had only raw materials, manpower, and enthusiasm. We had, literally speaking, no air force. Having invented the airplane, we had left to others its development and adaptation to military use. The Army had acquired its first plane in 1909; its first special appropriation for aviation, a sum of \$125,000, in 1911.⁷ Shortly before the European war began, we had stood fourteenth in total funds appropriated—well below Greece and Bulgaria.⁸ In spite of the great development of aviation by European belligerents and of our own tactical experiences in Mexico, the Army from 1909 to April 1917 had been able to acquire only 224 aircraft.⁹ Not one of these was, by European standards, a combat model; few were still in commission. At two flying fields operated by the Army there were,

when war was declared, 55 trainers, of which General Pershing later said, "51 were obsolete and the other 4 obsolescent."¹⁰

Nor was there in existence an aircraft industry which could remedy the deficiency. About a dozen companies were considered capable of filling government contracts, but their output was pitifully meager; in 1916 nine factories had contributed to the delivery of 64 planes out of 366 ordered.¹¹ Because of exaggerated ideas of security and the rapid changes in combat models, the Allies had not turned to American industry for aircraft as they had for other munitions. Few Americans had seen a modern tactical plane; fewer still knew what went into its construction other than airframe and engine.

The organization of military aeronautics in the United States was wholly inadequate for fighting a large-scale war. The Army's air establishment consisted of 131 officers, practically all pilots and student pilots (11 were reservists on active duty), and 1,087 enlisted men.¹² The first Army aviation office had been set up as the Aeronautical Division of the Signal Corps on 1 August 1907; and since 1914 control had been vested in the Aviation Section of that corps. The Chief Signal Officer, no aviator, was swamped by the rapid increase of responsibilities more properly in his ken, and, as a critic later said, "a colossal air arm cannot be organized as a section of a section of another arm."¹³ With so small an officer corps the Aviation Section was unable to furnish direction for the expansion program or commanders for the combat units. It turned naturally to civilian sources for leadership, and, while many of the industrial and professional men who were recruited were able enough, few had knowledge of aviation requirements or of military procedure. A ready source of technical advice existed in the National Advisory Committee for Aeronautics (NACA), and early in the war a number of joint Army-Navy aeronautical committees were formed. Most important of these was the Aircraft Production Board, a subsidiary of the Council of National Defense. By a law of 1 October 1917 the former was given legal status as the Aircraft Board, headed by a civilian and containing two other civilians and six officers, three each from the Army and Navy. Modeled apparently after the Cowdray Air Board in England, this committee was "to supervise and direct" the purchase and production of all aircraft, engines, and related materials, "as authorized by the Secretary of War and the Secretary of the Navy."¹⁴ The Aircraft Board lacked the authority of its English prototype. Organization and training of air units was a

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responsibility of the Chief Signal Officer, who did not have a controlling voice in production of materiel. Both these functions, for Army aviation, were under jurisdiction of the War Department but without clear-cut lines of responsibility or arrangements for co-ordination. The General Staff was without experience in formulating air policies and more interested in other matters. Hence, in effect, the air program assumed a position of semidetachment from the rest of the war effort with a shaky organization and with no precedent to serve as a guide.¹⁵

With an ample purse but no precise knowledge of their aviation requirements, American leaders had to turn to the European Allies for advice. The counsel received was not always divorced from selfish national and private interests, and it was rarely given with a true understanding of the situation in America. Co-ordination with the overall military program was faulty. On recommendation of an American mission sent to Europe in June under newly commissioned Col. Raynal C. Bolling, it was decided to forego for the present the development of purely American designs and the manufacture of pursuit planes, whose models changed too rapidly for standardization in factories so distantly removed from the front. Toward fulfilling the objectives set for July 1918 the United States should concentrate mainly on production of trainers, of the English-designed De Havilland 4, a two-place reconnaissance-bomber, and of the newly developed Liberty engine. Other types, including pursuits in great numbers, were to be purchased abroad.¹⁶ An extensive training program was inaugurated, entailing the use of American universities for ground-school work and newly built fields for primary flight instruction. Advanced training was for the most part scheduled for overseas schools, where combat experience of the Allies could be more readily exploited. Instruction of mechanics was similarly divided between American and European schools.¹⁷

The program got off to a late start and suffered a number of unanticipated interruptions. Amid the general confusion which characterized the early war effort, aviation was especially handicapped by slow communications between the combat line and the factory, by lack of centralized control, and by difficulties inherent in attempting to build an aircraft industry overnight. Public hopes, fanned by reports more enthusiastic than accurate, continued high throughout 1917. Early in the new year, amid the widespread criticism of the adminis-



.THE DH-4B

tration of the war, adverse rumors began to be noised about. Rumors were followed by disclosures, disclosures by congressional and presidential investigations. In the spring it became obvious that, in spite of the patent falsity of charges of graft and sabotage, the program was failing; the huge cloud of planes which was to have darkened German skies by June was as yet hardly larger than a man's hand. Actually the first U.S.-built DH-4 with Liberty engine was shipped from Hoboken on 15 March and was airborne in France on 17 May, two months after the great German offensive had been launched.¹⁸ In the meanwhile, the widely advertised threat of American air power had spurred German plane production; the enemy sardonically dubbed his intensified efforts of 1917 the *Amerikaprogramm*.

Disillusionment in the United States was painful, but it brought speedy reform. With legislative authority granted by the Overman Act of 20 May 1918, President Wilson by executive order removed Army aviation from the jurisdiction of the Signal Corps. Responsibilities for training and operations were vested in a Director of Military Aeronautics (Maj. Gen. William L. Kenly). A new executive agency, the Bureau of Aircraft Production, was "to exercise full and exclusive jurisdiction and control over production of aeroplanes, engines, and aircraft equipment" for the Army; the bureau was connected with the Aircraft Board by interlocking membership. The new organization was soon officially recognized as the Air Service, U.S. Army; but, inasmuch as its two components reported separately to the Secretary of War, there was in reality no common policy for the makers and users of planes. This functional duality was long to plague the Army air arm; for the time being it was mitigated by the appointment on 27 August of the civilian head of the Bureau of Aircraft Production, Mr. John D. Ryan, as Director of Air Service (over both phases of aviation) *and* as Second Assistant Secretary of War.¹⁹ The latter appointment was a move in the direction of separate cabinet representation for air, a measure which had been previously suggested in Congress and which was proving successful in England. But the arrangement was only a wartime expedient which recognized a cleavage within the War Department without providing a permanent solution for the problems involved.

Under the new regime production increased rapidly, though it is only fair to point out that many of the most stubborn difficulties were already yielding on the eve of the reorganization. Statistics emanating

from the several official sources are difficult to reconcile, but a fair estimate might include about 7,800 trainers and 3,500 service planes, largely DH-4's, built in U.S. factories by 11 November 1918, and 5,000 planes bought abroad.²⁰ At that date 499 DH-4's were assigned to squadrons at the front. Of 2,925 planes reaching the AEF's Zone of Advance during the war, only 696 were of American make. Perhaps about 30,000 service and training engines were produced. The rate of production was rapidly accelerating at the end of the war, standing then at 260 DH-4's per week, or about 13,500 per year.²¹ Six months more of war might have seen an Army air force such as had been promised in June 1917; but actually the "regiments and brigades of winged cavalry mounted on gas driven flying horses" never arrived to "sweep the Germans from the sky."

Air Service, AEF

The activities of the Air Service in the AEF were inevitably affected by the poor showing made at home. When General Pershing arrived in France in June 1917 he had only the most rudimentary elements of an air staff. Nevertheless, an ambitious AEF Aviation Project was formulated and dispatched homeward in a cable of 11 July. As amended on 18 September, this plan called for the deployment in France by 30 June 1919 of 260 tactical, 36 training, and 90 replacement squadrons. With auxiliary services it would require about 125,000 men.²² Preparations were initiated to care for this large force. Pershing as early as June 1917 had removed aviation from control of the Signal Corps, setting it up as the Air Service, AEF, with a chief and with separate divisions for the Zone of Advance and the Zone of the Interior. He arranged for the purchase from the French government of some 5,000 aircraft, largely pursuits, and for the establishment of airfields, depots, and training schools.²³

The administration of the ambitious project was far from perfect. Liaison with the Aviation Section in the States was poor, and air commissions sent to Europe sometimes acted without co-ordinating with the AEF. In November, Brig. Gen. Benjamin D. Foulois, an aviator who had been prominent in instigating the \$640,000,000 program at home, arrived to become Pershing's Chief of Air Service. Foulois brought a large staff which included more recently commissioned civilians than Regular Army officers.²⁴ Individual ability hardly compensated for lack of experience in staff work. Internal jealousies

flared up, and friction occurred with air officers who had been in France for some time. There was as well mutual antipathy between air and ground officers. The Air Service was loath to take advice from men who resolutely refused to enter a plane; ground officers accused the aviators of being temperamental, lacking in the "garden variety of home-made discipline," of substituting a "hodgepodge of independent personalities for an ordered administration."²⁵ Pershing spoke of Foulois' staff as comprising a "lot of good men running around in circles."²⁶ At any rate, they proved incapable of building an effective organization; their failure, aggravated by production delays at home and tardiness in French deliveries, threatened to wreck all projected aviation schedules. It was 1 April 1918 before the first combat squadron was assigned to the front. By the time the 1st Division got its baptism of fire at Cantigny on 28 May, Pershing could write in his diary, "Our aviation doing well at the front." Only six squadrons had then been sent forward; by promises of the previous spring, achievement of the 4,500-plane objective should have been in sight.²⁷

Pershing, at the instigation of some of the air officers, instituted a thorough reorganization which followed immediately that in the United States. On 29 May he appointed as Chief of Air Service Brig. Gen. Mason M. Patrick, an engineer who had never been in an airplane. Other officers were transferred, lines of authority were made more precise, and the whole administrative structure of the Air Service was revamped.²⁸ A more modest objective of 202 combat squadrons was substituted for the AEF Aviation Project of 386.²⁹ The reorganization proved salutary, and with renewed efforts at home the Air Service was able to accelerate the rate of deployment of combat units. By Armistice Day forty-five squadrons had been assigned to the front.³⁰

But with delays at home and in the AEF's Zone of the Interior, the combat echelon could hardly assume the decisive role so confidently predicted in the spring of 1917. Even at the war's end the American air force was dwarfed by that of the Germans, the British, and the French. Air Service units were in combat just seven months; during that time the weekly average of squadrons assigned to the front was about nineteen. The official Air Service record carried a score of 781 enemy planes shot down for a loss of 289.³¹ If the scale of combat activities was limited, the ratio of victories was remarkable for a fledgling air force. When war was declared, the Aviation Section was

as ill informed of the combat as of the materiel phase of aeronautics, and it was necessary to learn from the Allies all but the very rudiments of flying. By Armistice Day the basic lessons had been absorbed, and the Air Service, AEF, had shown some evidence of boldness of concept in the application of air power; here, as in production, there was great promise if only limited achievement. It is no reflection upon the bravery and skill of American pilots to suggest that both achievement and promise owed much to the genius of Brig. Gen. William Mitchell, who was in a very real sense the founder of American air power.³²

Mitchell, after a varied career in the Signal Corps, had become interested in military aeronautics in its infancy and had followed its progress in the European war through such information as was available in Washington. He had learned to fly in 1916 and, as a major, had for a while been in charge of the Signal Corps' tiny Aviation Section. Sent to Spain as a military observer in March 1917, he had moved up to Paris with the American declaration of war. With characteristic energy and disregard of military protocol, he had plunged immediately into the task of learning at first hand the true nature of the air war. Until Pershing's arrival he was something of a free lance, and his inspections took him to various headquarters, to depots and airfields, to—and over—the front lines. Sentiments which were later to stud his public utterances began to appear in his diary: "The only real defense against aircraft is other aircraft." "A very significant thing to me was that we could cross the lines of these contending armies in a few minutes in our airplane, whereas the armies have been locked in the struggle, immovable, powerless to advance for three years. . . . They get nowhere, as far as ending the war is concerned." After experiencing a night raid by German planes, he had come to have a wholesome respect for the material and morale effects of bombardment: "No one can ever tell me that there is nothing in airplane bombing. It will have a great effect on all the operations, if efficiently carried out." "Several generations will have to be born and pass away before people can adopt and maintain the same attitude toward this form of warfare as they exhibit toward the old familiar ones."³³

In May, Mitchell visited Maj. Gen. Hugh M. Trenchard, then commander of the Royal Flying Corps, and was profoundly impressed by his advanced ideas of air power. Mitchell quoted approvingly Trenchard's dictum that "an airplane is an offensive and not a defensive weapon" and the views the latter expressed on behind-the-line bom-

bardment and on a unified air command.³⁴ Mitchell's respect for Trenchard was significant, for it was to be British rather than French concepts which were to guide his own development and, through him, were to affect American doctrines of air warfare.

Mitchell's active curiosity drove him to study the logistical and administrative foundations of air power. Within a few weeks of his arrival in France he had, on his own initiative and with French aid, drawn up and submitted to the War Department a detailed plan for the organization of an AEF air force. Receiving no reply to his recommendations, Mitchell had turned to the French government as an effective channel for his ideas and, according to his own statement, had been largely responsible for Ribot's cable of 24 May which launched the U.S. aviation program on so ambitious a scale.³⁵ Joining Pershing's staff in June as aviation officer, Mitchell had at the latter's direction helped frame the estimates of 11 July which formed the basis of the AEF Aviation Project. Later, when that program had bogged down, he had lent his influence to the administrative reorganization of the Air Service which was effected in May 1918.³⁶ More to his liking, however, was his service at the front, where his colorful personality and exploits soon made him a legendary figure. In the rapid shifting of commands that was characteristic of the AEF, he served successively as commander of Air Service for the Zone of Advance, the I Corps, the First Army, and the First Army Group, advancing in grade from major to brigadier general.

Mitchell never received an American air force commensurate with the ambitious ideas of air power which he was developing, but he tested those ideas with such units as were put at his disposal. American aviators were fed into quiet sectors in April 1918, achieving their first individual victory on the 14th. The Air Service had its initial lesson in the use of organized air units in July in a sharp engagement during the battle of Château-Thierry. Throughout the war some squadrons fought with the British or French; for those under U.S. command much of the air action consisted of routine reconnaissance and patrol duty.³⁷ In two battles the force under Mitchell's command was powerful enough to indicate something of his imagination and tactical skill.

The initial objective of the First Army was the elimination of the St.-Mihiel salient, planned for September 1918. Charged with control of that army's aviation, Mitchell determined to insure complete air superiority over the field of battle. The plan, drawn and executed by

himself and a small staff, called for a tremendous force of 1,500 planes—the largest air show of the whole war. Of the 1,481 actually engaged, only 609 were from American squadrons, the remainder being made up of aircraft from the RAF's Independent Force, the whole of the French Air Division (strategic reserve), and Italian and Portuguese units. Preparations for so large a battle could not be hidden completely, but a certain degree of tactical surprise was achieved. Only about a third of the aircraft were attached to the ground forces. The rest, divided into two air brigades, struck alternately at the right and left flanks of the salient and at communications and supplies at the rear. Local air superiority was maintained according to plan throughout the battle, and the air component contributed effectively to the American victory in spite of unfavorable weather.³⁸ Mitchell's skill in marshaling and controlling so large and heterogeneous a force was surprising; in short, St.-Mihiel was as promising a debut for the Air Service as for the First Army.

In the more extended Meuse-Argonne offensive of 26 September–11 November, Mitchell was unable to rally so large a force, being usually dependent upon American units only. The principle of concentration which had been so successful at St.-Mihiel continued, however, to guide his tactics. In the Meuse-Argonne it was the Americans who occupied the salient and the German air force which struck at the flanks, trying, in Mitchell's words, to "make our infantry insist on splitting up our pursuit aviation so as to give local protection everywhere." Mitchell refused to "spread a thin veneer of airplanes all along the front through which they could break easily at any point with a large group formation." To intercept German "battle squadrons" of attack planes, the Americans organized a special branch of their forces known as "low-flying pursuit." Patrols of five planes each were assigned ten-kilometer fronts. Flying at two levels and using friendly antiaircraft fire to spot enemy intruders, the patrols proved successful in breaking up their attacks on ground troops.

The rest of his offensive forces Mitchell concentrated along the axis of the American advance. Since the Germans had numerical superiority in the air and were flying in large formations, he used where possible a force of two groups of pursuits and one group of day bombers. These struck at troop concentrations and communications and attacked airdromes behind the lines with the purpose of destroying the enemy's installations and planes on the ground or forcing him to come up and

fight at a disadvantage. One day mission was sufficiently large and successful to draw more than passing attention. On 9 October, with some French reinforcements, Mitchell was able to employ a force of about 200 bombers escorted by some 110 pursuits and 50 three-place planes. With these he attacked and disorganized German army reserves gathering in the rear for a counterattack. The German air defense was overwhelmed, and the area bombed with telling effect. Thirty-two tons of bombs were dropped in this mission; subsequent operations during the same day and the following night brought the total for twenty-four hours to sixty-nine tons.³⁹ It was probably the Air Service's most notable bombardment effort during the war.

An Associated Press dispatch of 10 October gave a contemporary judgment of the importance of this mission:

The bombing squadrons which made up this air fleet probably represent the first definite American unit of major importance in the independent air forces which are being built up by the Entente powers. This navy of the air is to be expanded until no part of Germany is safe from the rain of bombs. It is a thing apart from the fighting, observation, and bombing squadrons attached to the various army corps. The work of the independent force is bombing munitions works, factories, cities, and other important centers far behind the German lines. It has been promised that eventually Berlin itself will know what an air raid means, and the whole great project is a direct answer to the German air attacks on helpless and unfortified British, French, and Belgian cities.⁴⁰

When war ended, the Air Service had not begun such attacks. Their total "rain of bombs" for the war was about 138 tons—or, to use the more impressive figure of the official report, 275,000 pounds. Their deepest penetration behind German lines was 160 miles.⁴¹ Even by the correspondent's own definition the attack of 9 October was hardly an independent mission. The sudden collapse of Germany made him a false prophet, but his predictions were better grounded than those of early 1917. On 6 June 1918 the RAF's Independent Force had been established with its commander, Trenchard, directly responsible to the Air Ministry. Its mission was strategic bombardment—in Germany when possible—and its operations had slowly mounted in intensity. The principle behind this organization had been grudgingly accepted by the French, and on 3 October the constitution of an Inter-Allied Independent Air Force, also directed by Trenchard but "under the Supreme Command of Marshal Foch for operation," had been agreed upon.⁴² The Air Service was to have participated in this combined force, which was still a paper organization when the Armistice came.

THE ARMY AIR FORCES IN WORLD WAR II

Early in 1918 the Air Service, AEF, had entered into an arrangement with the British for the combined production of the large Handley-Page night bomber and the training of U.S. crews for its employment. This project, like so many others, had lagged, and the Air Service was never equipped during the war with aircraft specifically designed for strategic bombardment.⁴³ Again, the deficiency might have been overcome in 1919.

Had the war lasted long enough to provide the Air Service with some experience in a bombardment program conceived independently of the movements of ground armies, its postwar history might have been far different. For in the interim between the two wars the relative importance of such an air mission became the crucial issue in the development of air power. Advocates of an air force tied closely to ground troops could speak authoritatively from experience; Americans who talked independent air operations could cite only theories. But in 1943 the correspondent's dream was to be fulfilled almost to the letter.

CHAPTER 2

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THE ARMY AIR ARM BETWEEN TWO WARS, 1919-39

FOR THE Air Service the Armistice brought surcease from battle but not from strife. From 1919 to 1939 the history of the Army air arm was dominated by a struggle for recognition which left a deep imprint upon the air organization and its personnel. Indeed, the character of the AAF on the eve of World War II and its self-conceived mission can be appreciated only in light of a conflict which had begun during the earlier war and was intensified after the return of the Air Service, AEF. In its second war the air arm occupied an anomalous position: it was a part of the Army, as its official title proclaimed, yet there was a degree of separatism in thought and in action not to be found among the other arms and services under War Department control. This was tacitly accepted in the command structure which emerged early in the war; it was sensed, too, by the average civilian, who with fine disregard for the formal chain of command might ask, "Are you in the Army or the Air Corps?" but never, "Are you in the Army or the Corps of Engineers?"

To understand this special character of the air force, it is not necessary to recall the myriad routine incidents which constitute so large a part of the life of a military establishment in time of peace. It should be sufficient here to describe the three paramount trends of the period: the effort to establish an independent air force; the development of a doctrine of strategic bombardment; and the search for a heavy bomber by which that doctrine could be applied. An approach so circumscribed as this will inevitably omit much that is important and interesting; worse still, it might foster the erroneous idea that from an early date all activities of the air arm were directed consciously toward those three goals. Yet so important were those trends in the

development of the air force which went to war in December 1941 that it is legitimate to confine the present discussion to them even at the risk of overemphasis and oversimplification.

Organization of the Army Air Arm, 1919-39

Of the trends designated above, that of broadest implication was the fight for independence of military aeronautics. Originating as a jurisdictional problem within the Army, the struggle became a major national issue and hence should be viewed in the broader context of the whole American scene. The two decades after the Armistice saw in the United States a revulsion from the enthusiasms of the great crusade to save democracy, a widespread skepticism concerning the real war aims, and a profound distaste for militarism and for war in general. The slogans of the period are suggestive of its temper—"return to normalcy," "disarmament" and "limitation of armaments," "outlawry of war," "Merchants of Death," "neutrality legislation." Neither isolationism nor pacifism, the great depression nor the New Deal, was conducive to heavy expenditures for the Army and Navy; and, indeed, until the aggressor nations began to march in the mid-thirties, the problem of national defense seemed to many Americans but an academic exercise invented by the militarists.

In spite of the prevailing mood, defense appropriations for 1919-39 were heavier than for any similar peacetime period, but they were inadequate by standards to which the armed forces had become accustomed. In the inevitable competition for limited funds, the requests of each service were guided by its peculiar philosophy of national security. The Navy held out for a strong battle fleet built around the capital ship. The War Department wished to increase the size of the Regular Army—the 1919 request for half-a-million men was scaled down to 280,000—and to organize it as a nucleus for rapid and vast expansion in an emergency rather than as an integral force. According to this scheme existing air units would be spread thin as cadres among the several armies.¹ Aviation officers had to accept this concept, but the most advanced thought in the Air Service favored a relatively small body of highly trained professionals welded into a compact striking force ready for instant service. This view found no support in the General Staff, composed exclusively of ground officers only mildly interested in air power. In 1917 they had vainly opposed the \$640,000,000 appropriation for aeronautics; after the war they were able to

exert a tighter control on the purse strings. Not unnaturally the Air Service wanted a separate budget.

This was not the only source of friction. Personal ambitions and rivalries, the tendency toward "empire-building," and service loyalties and jealousies were frequently in evidence. Fundamental considerations were occasionally obscured by specific problems which were important enough to service morale but were symptomatic rather than causal in nature. As a new arm, the Air Service had few general officers. In the lower grades, where promotion was controlled inexorably by seniority, Air Service pilots found themselves many files behind ground officers who had entered the service at the same time but whose commissions bore an earlier date because of the longer training required of the aviator. The proportion of nonflying Air Service officers in the lower grades, flight pay, and insurance were perennial causes of complaint. So too was the matter of uniforms: much feeling was engendered in arguments for and against the stiff collar as a necessary adjunct of the military aviator. Comparatively few pilots were graduates of West Point, and, in general, they felt discriminated against for that reason. One flying officer testified, on the basis of a study of returning veterans of World War I: "There was great dissatisfaction among the Air Service personnel with the treatment they had received particularly by Army Officers, and I am a graduate of West Point and I found that graduates of West Point were anything but popular among the personnel which came in from civilian life."²

Beneath these problems, serious or trivial as they now appear, the underlying issue was clear enough: it hinged on an attitude toward the airplane and air power. To some the airplane was simply another weapon, effective enough but comparable in species to the tank or the submarine; like those weapons, the plane could best be employed by the Army and Navy in fulfilling their traditional missions, and its development could best be intrusted to agencies comparable to the Tank Corps or the Bureau of Construction and Repairs. But to most airmen the plane was genus, not species—a new and unique instrument of destruction of such revolutionary potentialities as to demand a sweeping reorganization of the national defense structure. Only by securing a considerable measure of autonomy could the Air Service formulate its own combat doctrines, develop equipment appropriate thereto, and direct its forces in battle.

Literally dozens of plans were suggested for the control of air

power, but, shorn of details, the proposals for reorganization followed one of four patterns. Most radical was the independent air force, usually drawing heavily upon the RAF and its Air Ministry for precedent. This scheme called for a new cabinet agency on a par with the War and Navy departments. Since in most plans of this type the Department of Aeronautics was to control all government aviation—currently divided between the Army, the Navy, and civilian agencies—the terms “independent,” “separate,” and “united air force” were used interchangeably. Various expedients were suggested to govern the employment of aircraft by this department in operations over land and sea, but none offered an acceptable solution to the problem of unity of command. An alternative plan, which seemed compatible with current ideas of command and potentially more economical, gained popularity after 1923. This entailed creation of a single Department of National Defense with co-ordinate subdepartments for Army, Navy, and Air. When this plan was rejected, some Air Service officers, cautious by nature or discouraged by constant rebuffs, were willing to settle for a degree of autonomy within the War Department equivalent to that enjoyed by the Marine Corps in the Navy. And, when that was not forthcoming, as a last resort they accepted as a poor compromise such tactical control as might be achieved by assigning the bulk of offensive air units to General Headquarters.

The War Department resisted in turn every proposal to eliminate or diminish its control over military aviation. The Secretary of War was supported in this resistance, overtly or tacitly, by each Chief Executive during the period under consideration, by the powerful military and naval affairs committees in Congress, and by most general officers. Similarly, the Navy Department, its General Board, and most admirals objected strenuously to any organizational change which would establish a different control for overwater aircraft or which threatened to disturb the dominant role of the battleship. Service academies and colleges followed service lines. In 1925 Secretary of the Navy Curtis D. Wilbur could say: “I think there is not a man in either service, outside of those connected with the aircraft—I do not know of any in the service, with one or two exceptions in the Army possibly—who would regard the Air Service as a principal service.”³

Certainly that unanimity existed within the Army's General Staff, and it was in this agency that proponents of air reorganization found their most potent antagonists. As late as 1926 an official poll taken for

a congressional committee showed 101 members of the staff opposed to a Department of National Defense with coequal subdepartments for Army, Navy, and Air, and only one who favored it.⁴ In spite of disingenuous statements to the contrary, the General Staff commonly dictated War Department policies.⁵ In 1919 General Foulois testified:

The General Staff of the Army is the policy-making body of the Army and, either through lack of vision, lack of practical knowledge, or deliberate intention to subordinate the Air Service needs to the needs of the other combat arms, it has utterly failed to appreciate the full military value of this military weapon and, in my opinion, has utterly failed to accord it its just place in our military family.⁶

This attitude toward the General Staff was shared by other advocates of air autonomy, whether officers or civilians, at that time and later. Sometimes their language was less temperate than that of Foulois. Representative Fiorello H. La Guardia, an aviator in World War I and an ardent supporter of the independent air force, testified in 1926: "There is one obstacle in the way of new legislation, Mr. Chairman. That is the General Staff. If this committee does not lock the doors to the General Staff, you will not get a bill through. . . . The General Staff are either hopelessly stupid or unpardonably guilty in refusing to recognize the necessity of making a change in aviation." ⁷ Even today it is difficult for interested parties to view the controversy dispassionately. In behalf of the General Staff it should be pointed out that its members were responsible for the current as well as the future defense of the United States and that they were therefore prone to evaluate the potentialities of the airplane in terms of its known accomplishments in the recent war. If this tendency at times injected a certain degree of realism into considerations of immediate defense measures, it also acted as a deterrent to future development of a weapon still in its infancy. Because for many years the Air Service was denied membership in the General Staff and thus any real opportunity to affect policies at the highest level, it was natural that many airmen should look on that agency as a stronghold of bureaucratic conservatism.

The chief impetus for change came from returning officers of the Air Service, AEF. They were backed by Air Service officers who had remained in the States. No accurate poll of opinion was taken, but in 1925 a congressional committee found that an overwhelming majority of aviators favored an independent organization. As a typical response to the committee's standard question in that respect one might cite the

reply of a pilot lieutenant: "It has been discussed everywhere I have been where there are any Air Service officers, and I have never heard anybody yet—any Air Service officer—against it."⁸ There were a few iconoclasts in the Navy who supported the move for reorganization in some particulars—not in all. There were, too, enthusiastic advocates of the separate air force in Congress, and eventually a large public following was built up. Early incumbents of the Office of Chief of the Air Service (Corps) found it difficult to press vigorously for reorganization and, by default, leadership devolved upon General Mitchell, assistant chief from 1919 to 1925, whose energetic and sometimes flamboyant figure dominated the postwar struggle as it had the combat effort in France.

The alignment was hardly an even one. Mitchell and his followers had enthusiasm, but their opponents had rank. Because the far-reaching and permanent changes sought by the Air Service demanded legislative sanction, much of the struggle was aired publicly. In 1928 Maj. Gen. Mason M. Patrick, recently retired Chief of the Air Corps, wrote somewhat plaintively that "the Air Service or rather the air effort, of the United States since we entered the World War has probably been the most investigated activity ever carried on by the United States."⁹ The end was not then in sight. Six years later the Baker Board listed fourteen such investigations (omitting the one most favorably inclined to the independent air force),¹⁰ and others were to follow. The members of most boards were distinguished enough, but they were named by those in authority who were opposed to change: from the Menoher Board of 1919, composed of a nonflying Director of the Air Service and a group of artillery officers, to the Baker Board of 1934, with its military membership of four ground officers and one aviator, the investigating committees from the airman's point of view were usually stacked. Whatever may have been the logic of arguments redundantly cited, he viewed the conclusion, usually conservative in nature, with deep suspicion: as a disgruntled witness said in one instance, "the findings of the Morrow Board were approved before the Morrow Board ever assembled."¹¹

Filled with a missionary zeal and frustrated by lack of success, Mitchell and his followers spoke intemperately. Their opponents replied in kind and attempted to still dissident voices by authority rather than by reason. And so the fight for recognition of air power took on all the bitterness of domestic strife, with "the feeling on the part of

each side that the other side had been unreasonable.”¹² The controversy was characterized by much poor rhetoric, by extraneous political issues, by Fabian tactics on the part of those in power, and at times by a disconcerting lack of decorum and of candor. To the public it became a battle royal of “Billy Mitchell versus the Brass Hats,” with the climax in his court-martial, a *cause célèbre* unique in American military history. But, from a purely administrative viewpoint, the struggle may be conceived as running through four phases, punctuated by the Army Reorganization Act of 1920, the Air Corps Act of 1926, and the formation of the GHQ Air Force in 1935.

Legislative efforts to establish aviation as a combatant branch of the Army and as a separate service had begun, respectively, in 1913 and 1916. Attracting little support, those efforts had failed, and, when the United States entered World War I, its Army air arm consisted of the Aviation Section, Signal Corps, as provided in an act of 18 July 1914.¹³ It was the failure of that organization and its allied offices to adjust to the demands of large-scale war which led to the establishment in 1918 of the Air Service as a quasi-autonomous body within the War Department. More successful than its predecessor, the Air Service was far from perfect as an administrative agency, and it existed only as an emergency measure set up by executive order. After the Armistice, in spite of further temporary expedients adopted by President Wilson, the loss of key personnel through resignations threatened to leave military aviation without leadership in the crucial period of demobilization of the air force and collapse of the war-born aircraft industry.¹⁴

The demand for new policies to guide a peacetime program was not peculiar to the Air Service. In 1919 the War Department was pressing for a drastic revision of the military establishment as prescribed in the National Defense Act of 3 June 1916. Returning Air Service officers were eager that any reorganization should provide for a separate air force. Congressional support was stronger than in the prewar period, but, of the eight bills introduced in 1919-20 to provide for a Department of Aeronautics, only one was favorably reported.¹⁵ Expert studies of the problems involved served merely to confirm opinions previously held. Pershing's Dickman Board at Chaumont and the War Department's Menoher Board at Washington opposed any change in the control of aviation, the latter concluding that “the military air force must remain under the complete control of the Army and form an integral part thereof.”¹⁶ Yet the Crowell mission, appointed by

Secretary of War Newton D. Baker and consisting of men with wide executive experience in aviation, returned from a tour of Europe with an unequivocal indorsement of the separate department of air.¹⁷

Baker gave wider circulation to the Dickman and Menoher reports than to the Crowell—indeed, the latter seems to have been deliberately suppressed—and he supported the proposals of the General Staff, which in modified form took effect in the Army Reorganization Act of 4 June 1920.¹⁸ This law gave formal recognition to the Air Service as a combatant arm of the Army. The office of Second Assistant Secretary of War (then vacant) was abolished. Authorized strength of the Air Service was set at 1,516 officers, 2,500 flying cadets, and 16,000 enlisted men, out of a total of 280,000 for the Army. Specific complaints were answered by regulations requiring that tactical units be commanded by flyers, authorizing flight pay of 50 per cent base pay, and ambiguously stipulating a limit on the number of nonflying officers. In spite of these minor concessions, the new law was regarded by many aviators as a crushing defeat for Air Service aspirations.

In his annual report for 1919, the Secretary of War concluded a lengthy analysis of the case for air power with the judgment that "on the whole case, it seems quite clear that the time has not come to set up an independent department of the air." He was willing to soften that statement with the caveat that "the art [aviation] itself is so new and so fascinating, and the men in it have so taken on the character of supermen, that it is difficult to reason coldly, and perhaps dangerous to attempt any limitation upon the future based even upon the most favorable view of present attainment."¹⁹ The aviators, who rarely reasoned coldly, were confident of what the future would hold, but they thought that its arrival could be hastened by direct action in the present. Balked within the War Department, they carried their fight into a broader arena, seeking by spectacular stunts and by equally spectacular statements to win public support to their cause.

For six tumultuous years Billy Mitchell was a national figure, seldom absent from the headlines for long. He had returned from France as the best known of Baker's "supermen." With his war record he might have expected to head the peacetime Air Service, but instead he served as assistant chief successively to Menoher and Patrick—and to their frequent discomfiture. Later, Mitchell expressed the opinion that "changes in military systems come about only through the pressure of public opinion or disaster in war."²⁰ Public opinion had been re-

sponsible for the creation of the Air Ministry in England and, properly nourished, for the Aviation Act of 24 July 1917 in America. Mitchell was unwilling to wait for disaster in war; as he told the Morrow Board in 1925, he and his followers had "appealed to the President and the American people to hear our cause."²¹ The people were more receptive than Harding or Coolidge.

Having begun his educational campaign in 1919, Mitchell intensified his efforts as his cause weakened in the War Department. His energy was prodigious. He poured forth a steady stream of articles and newspaper stories and found time to write three books on air power. His published testimony before committees alone constitutes a formidable corpus. He became an indefatigable lecturer and a hardy after-dinner speaker; he courted interviews by the press.²² Read in quantity now that the battle has passed, his writings appear repetitious and not always models of style. An ardent proselyter, he was capable of slanting an argument or of making claims for air power hardly justified by the performance of aircraft then available. But of the vigor and sincerity of his message there can be no doubt or of its effectiveness in arousing widespread interest. Time has proved the essential soundness of most of his basic contentions.

Because of the traditional importance of sea power in the national scheme of defense, Mitchell's boldest attacks against the existing order were directed against the Navy. In that service, even more strenuously than in the Army, conservatives had resisted the development of the air arm. Mitchell ascribed that resistance to occupational jealousy of men who feared the intrusion of a new weapon which might upset the theories of Mahan. Since his return from France, Mitchell had insisted that an airplane could sink any surface ship by bombs or torpedoes. Hence submarines and land-based planes could defend the nation from any attack. At a time when economy in government was a magic talisman, his claims that money spent on battleships was a waste and that national security could be had at a lesser figure through creation of a unified and independent air force were bound to receive attention.²³ His repeated requests for a test on suitable naval vessels were staunchly resisted by the Navy, which conducted inconclusive tests of its own in 1920, until congressional interest finally forced compliance.²⁴

The test, held off the mouth of the Chesapeake in July 1921, attracted widespread public interest. There, after naval aircraft in June

had easily disposed of a surfaced U-boat, Mitchell's First Provisional Air Brigade, hastily assembled and trained at Langley Field, attacked and sank three German ships—a destroyer, the cruiser *Frankfurt*, and the heavily compartmented battleship *Ostfriesland*. Disputes arose as to the manner in which the experiment—directed by the Navy—had been conducted, and the Joint Board's report tended to deprecate the effectiveness of aerial bombing.²⁵ But the fact of the sinkings was indisputable, and Mitchell went on to clinch the validity of his claims by tests conducted with like results on obsolete U.S. battleships—the *Alabama* in September 1921 and the *Virginia* and *New Jersey* in September 1923.²⁶

Renewed congressional interest in the independent air force stimulated by the *Ostfriesland* test was unproductive in the face of opposition in both houses and from President Harding.²⁷ The annual reports of the Chief of the Air Service indicated, however, the need of some immediate action to prevent the virtual extinction of the air arm. Equipment, largely of wartime vintage, was obsolescent and unsafe, with personnel far below authorized strength. On 30 June 1921 the Air Service numbered but 975 officers and 175 flying cadets; a year later the officer roster had shrunk to 952, enlisted strength to 8,936.²⁸ With only one group each of pursuit, attack, and bombardment aviation,²⁹ the Air Service as a combatant arm was practically demobilized. Cautious in his policies, Patrick was then no public advocate of the separate department for air; he did plead for more liberal support of aeronautics and for recognition of the sharp functional distinction between auxiliary units for the Army ("air service," ideally 20 per cent of the total air strength) and offensive aviation ("air force," ideally 80 per cent), which needed a different type of command structure.³⁰ In response to definite recommendations made by Patrick, the General Staff in March 1923 appointed its own board to examine the status of the Air Service. In spite of its constituency, the Lassiter Board confirmed Patrick's dismal appraisal. Stating that air operations were "now recognized as being as important as the tactics of the ground and sea forces," the board recommended a ten-year expansion program with increased and regular appropriations and the acceptance of Patrick's idea of massing the bulk of offensive aviation into a striking force under GHQ.³¹ The Lassiter report was approved by the Secretary of War, but, when naval members of the Joint Board opposed it, he made no attempt to secure the enabling legislation.³²

Mitchell, sent to the Orient to quiet down after the battleship tests of September 1923, returned in the following July to renew his fight.³³ In October 1924 a joint congressional committee was appointed to investigate alleged irregularities in the contracts and expenditures for Army and Navy aviation. The Lampert Committee went far beyond its designated mission, bringing under review the whole province of military aeronautics. Its hearings lasted nearly a year, during which time a hundred and fifty witnesses were examined. Proponents of reform in the handling of air power were received sympathetically, and the hearings became especially a public forum for the dissemination of Mitchell's ideas.³⁴ He continued to urge the establishment of the separate unified air force but conceded that a unified Department of Defense with coequal air, ground, and naval forces would probably serve satisfactorily.³⁵ In 1923 Harding had suggested, as an economy measure, unification of the armed services—though without any special reference to the autonomous air force.³⁶ This solution to the problems of organization gained in popularity, eventually being accepted even by the cautious Patrick.³⁷

Mitchell did not confine his testimony to recommendations for changes in the administrative structure. He elaborated upon specific evils in the current conditions of the Air Service and denounced those in authority who were responsible. Archconservatives who controlled the General Staff, the War Department, and the Navy, he charged, were deliberately hostile to improvements in the air arm, refusing to heed the suggestions of air officers and attempting to control their public testimony by more or less veiled intimidation.³⁸ The virulence of Mitchell's attacks in the hearings and in widely read magazine articles led Secretary of War John Wingate Weeks to replace the troublemaker as Patrick's assistant.³⁹ In April 1925 Mitchell was transferred to San Antonio as air officer for the Eighth Corps Area, a demotion so transparent as to lead his friends to speak, with fine disregard for climatic conditions, of his exile to Siberia.⁴⁰ On 5 September he used the recent disaster to the Navy's dirigible *Shenandoah* as an occasion for releasing to the press a statement containing a grave indictment of those in the Army and Navy responsible for the neglect of aviation. His intent was deliberate, and his blast attained results he must have expected—a summons to Washington to stand trial before a general court-martial. The trial, lasting from 25 October to 17 December, was not a model of judicial procedure. Testimony again

THE ARMY AIR FORCES IN WORLD WAR II

ranged widely and was avidly followed in the press, until the case became essentially a trial of air power before the bar of public opinion rather than of Mitchell on charges under the omnibus 96th Article of War. Mitchell was found guilty as charged and suspended from duty for five years, a sentence which brought his early resignation from the Army.⁴¹ But, as one newspaper had predicted, "‘Mitchellism’ will remain after Colonel Mitchell has gone."⁴²

The verdict was highlighted by the almost simultaneous publication of two conflicting reports on the status of military aviation. On 10 September the secretaries of War and the Navy had asked President Coolidge to appoint a committee to consider "the best means of developing and applying aircraft in National Defense."⁴³ The request, coming before Lampert's congressional committee had reported, was of questionable taste; it was widely interpreted as a means of counter-acting unfavorable publicity from the Mitchell trial and the anticipated recommendations of the Lampert group. Coolidge, opposed to the independent air force and to the troublesome Mitchell, named a committee headed by Dwight W. Morrow. Critics of the existing air regime were not soothed by the President's letter of appointment which expressed the hope that Morrow's efforts would "result in bringing out the good qualities of the Air Service."⁴⁴ The Morrow Board heard all the familiar arguments reiterated by familiar witnesses (including Mitchell, awaiting trial), and its findings were released on 3 December in time to neutralize criticism of the Mitchell verdict.⁴⁵ The report was a general vindication of the status quo. It held that there was no danger of an air attack on the United States and that our air force compared favorably with that of any other power. Because the board did not "consider that air power, as an arm of national defense, has as yet demonstrated its value for independent operations," it opposed the creation of a separate air force; the unified Department of Defense was rejected as too complex and inefficient. The report recognized the distinction, insisted on by Patrick and the Lassiter Board, between support aviation and the offensive striking force; but the positive recommendations listed were only a sop to continued agitation. The name of the Air Service should be changed to Air Corps, which should have representation in the General Staff and two additional brigadier generals. The only concession to the move for departmental reorganization was the suggestion that an assistant secretary be

appointed in each of several departments—War, Navy, Commerce—to supervise aviation.

The Lampert report, published on 13 December,⁴⁶ was in many respects an indorsement of Mitchell's ideas. On the central issue of organization, after an analysis of six possible schemes, it favored the single Department of Defense with equal representation for air, ground, and naval forces. These dissident reports evoked a wave of new air bills in Congress, ranging from Representative Charles Curry's detailed plan for a Department of Defense to a War Department-sponsored bill providing only minor changes.⁴⁷ The bill which was finally enacted purported to be a compromise, but it leaned heavily on the Morrow recommendations.

The Air Corps Act of 2 July 1926⁴⁸ effected no fundamental innovation. The change in designation meant no change in status: the Air Corps was still a combatant branch of the Army with less prestige than the Infantry. The establishment of an air section in each division of the General Staff was prescribed for a three-year period. A new Assistant Secretary of War was to be named to help in "fostering military aeronautics," but in the absence of a more definite mission his usefulness would be determined by the attitude of the Secretary. Specific provisions were aimed at removing complaints in respect to flying officers' rating, pay, and promotion and at regularizing procurement procedure. To remedy existing deficiencies in personnel and equipment, the law authorized a five-year program to bring the Air Corps up to a strength of 1,518 officers, 2,500 flying cadets, 16,000 enlisted men, and 1,800 serviceable aircraft.

The skepticism with which Air Corps officers viewed this legislation was confirmed by the experience of the next few years. Funds were not made available for the authorized expansion, and for that failure the War Department and the Bureau of the Budget, rather than Congress, seem to have been responsible.⁴⁹ Directed reforms were not carried out to the satisfaction of the officers concerned, and token representation in the General Staff accomplished little. The ineffectiveness of the Air Corps Act confirmed proponents of a sweeping reorganization in their opinions; between 1926 and 1935 twelve bills for a Department of Aeronautics and seventeen for a single Department of Defense were presented in Congress.⁵⁰ Not one was reported favorably, however, and by 1933 many Air Corps officers had come to believe it hopeless to strive longer for independence from the War

Department and had decided to adopt as a more limited objective the creation of a GHQ air force.⁵¹ The attainment of that objective would at least assure the concentration of offensive aviation under a central command and give to it a more or less independent mission. Experience in World War I seemed to justify such an organization; its need had been explicit in Air Corps doctrine and had been accentuated by technological improvements in aircraft which extended range and increased bomb capacity.

Opinion in the War Department had also moved toward acceptance of the idea of a GHQ air force. In January 1931 announcement was made of an agreement between Gen. Douglas MacArthur, Chief of Staff, and Adm. William V. Pratt, Chief of Naval Operations, which broke, at any rate for the time being, a long-standing stalemate between the Army and Navy over the question of control of aviation engaged in coastal defense.⁵² That agreement will be described more fully in another connection,* but it must be noted here that the agreement recognized the Army's primary responsibility for coastal defense and thus opened the way for a new exploration of the role of the Air Corps in national defense. Subsequent War Department and Air Corps studies were reviewed by a board headed by Maj. Gen. Hugh A. Drum. Its report in October 1933 did not accept the more advanced ideas of the Army's airmen, but it did recommend the creation of a GHQ air force of 1,800 planes. This concession encouraged members of the Air Corps to concentrate their efforts toward achieving that limited goal rather than continue the vain fight for independence.⁵³

Adoption of the central feature of the Drum Board plan was spurred by public agitation over casualties incurred by the Air Corps in its ill-fated venture in carrying the mail during the winter of 1934. Under a barrage of pointed questions as to the adequacy of equipment and training, two more investigating agencies were appointed—the Federal Aviation Commission headed by Clark Howell and the War Department's Baker Board.⁵⁴ Airmen could expect little sympathy from Baker on his record of 1920 or from the military members of his board, but its civilian membership seemed "safe" enough. The report submitted in July 1934 was, however, sharply critical of those Air Corps officers who had struggled for recognition of their arm.⁵⁵ Like the Morrow Board, Baker's group scorned any danger of air attack on the United States; the best means of national defense were the fleet,

* See below, p. 62.

"the only entirely dependable force" for operating at sea, and the Army, which "with its own air forces remains the ultimate decisive factor in war." The board was firmly opposed to either the unified defense department or the independent air force. The history of the air arm showed, it believed, that "the Air Corps has virtually been independent since its inception"; that production failures of 1917-18 had occurred because of its practical exemption from General Staff control; and that independent air force operations had not been decisive in the war. Hence the report concluded that "the time has arrived for the Air Corps to become in all respects a homogeneous part of the Army, under General Staff control, and be subject to military coordination, study, influence and operation."⁵⁶ Less, not more, autonomy was the cure for Air Corps ills. The desired results could be obtained by eliminating the now vacant post of Assistant Secretary of War; making the Chief of the Air Corps responsible for individual training, procurement, and supply under the Secretary; and following the Drum Board's recommendation for establishing a GHQ air force under the Chief of Staff.

One civilian, James H. Doolittle, filed a minority report, advocating separation of the Air Corps from the Army.⁵⁷

The Howell commission was free from War Department domination, and many felt that its verdict might run counter to that of the Baker Board. However, after the latter's report it appeared wiser to give the GHQ Air Force a trial than to press for more radical measures, and Howell's group made no recommendations on the organization of military aviation.⁵⁸ The reorganization suggested by Baker went into effect on 1 March 1935.⁵⁹ Tactical units scattered through the nine corps areas were assigned to the GHQ Air Force, with headquarters at Langley Field; its three wings were located at Langley (Va.), Barksdale (La.), and March (Calif.) fields. As Commanding General, GHQ Air Force, Maj. Gen. Frank M. Andrews was responsible for organization, training, and operation of the force, reporting to the Chief of Staff in peace, the commander of the field forces in war. The Chief of the Air Corps, Maj. Gen. Oscar Westover, retained responsibility for individual training, procurement, and supply. Administrative control of the air bases remained in the hands of the several corps area commanders.

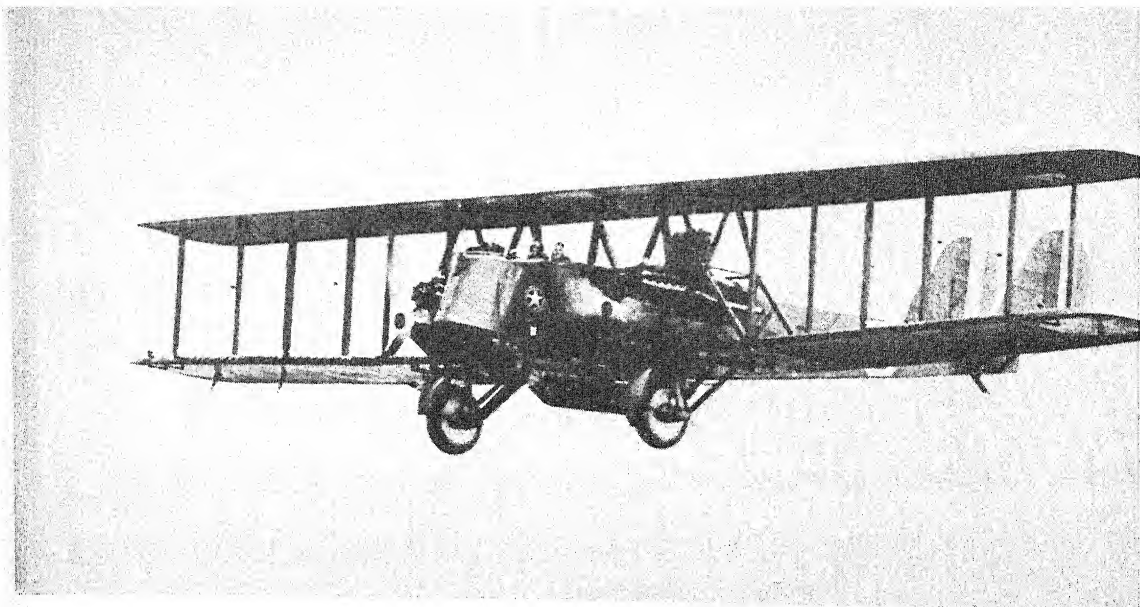
Thus, although the GHQ Air Force provided an improved command structure for operations by concentrating a considerable share

of the tactical units under a single head, the new arrangement was far from ideal. Most of the specific administrative difficulties which arose during the next few years stemmed from two basic inconsistencies: divided authority between the Air Corps and the corps areas and between the two elements within the Air Corps.⁶⁰ As to the first, the Air Corps presented a unified front in attempting to secure an exempted status* for all airfields; such status, minus the important prerogative of court-martial jurisdiction, was granted in May 1936, revoked in November 1940.⁶¹ In respect to its internal organization, Air Corps opinion, like the Air Corps itself, was divided. The ultimate purpose of the air arm was effectiveness in combat. Command responsibility for that mission within the Air Corps devolved upon the Commanding General, GHQ Air Force. But he had no voice in the individual training and indoctrination of his crews or in the development and procurement of equipment. Over those functions the Office of the Chief of the Air Corps (OCAC) had control. The two agencies were on the same command echelon, reporting separately to the Chief of Staff. Essentially it was a revival of the functional dualism which had proved so mischievous in 1917-18. Andrews and Westover, agreeing on the need of a single chain of command under the Chief of Staff, differed as to which of the offices should take precedence. Year after year, studies and conflicting recommendations were made without result. Finally, under the stress of an incipient rearmament program, the consolidation was effected on 1 March 1939. By a War Department directive, both the GHQ Air Force and the OCAC were made directly responsible to the Chief of the Air Corps.⁶²

The new arrangement was to prove short-lived, but, since it coincided with the inauguration of a vast expansion of the Air Corps† under threats from abroad, it may serve here as a convenient terminus. A quarter-century had passed since the first official recognition had been accorded the air arm by the act of 18 July 1914. Air Corps officers, no longer militantly crusading in public for independence, had little cause for complacency with the fruits of their long struggle. Read out of context, the story of that struggle can be made to appear, as the Baker Board interpreted it, an attempt of ambitious officers to further their own petty interests by escape from the salutary control of a beneficent General Staff. Certainly air officers had a normal share

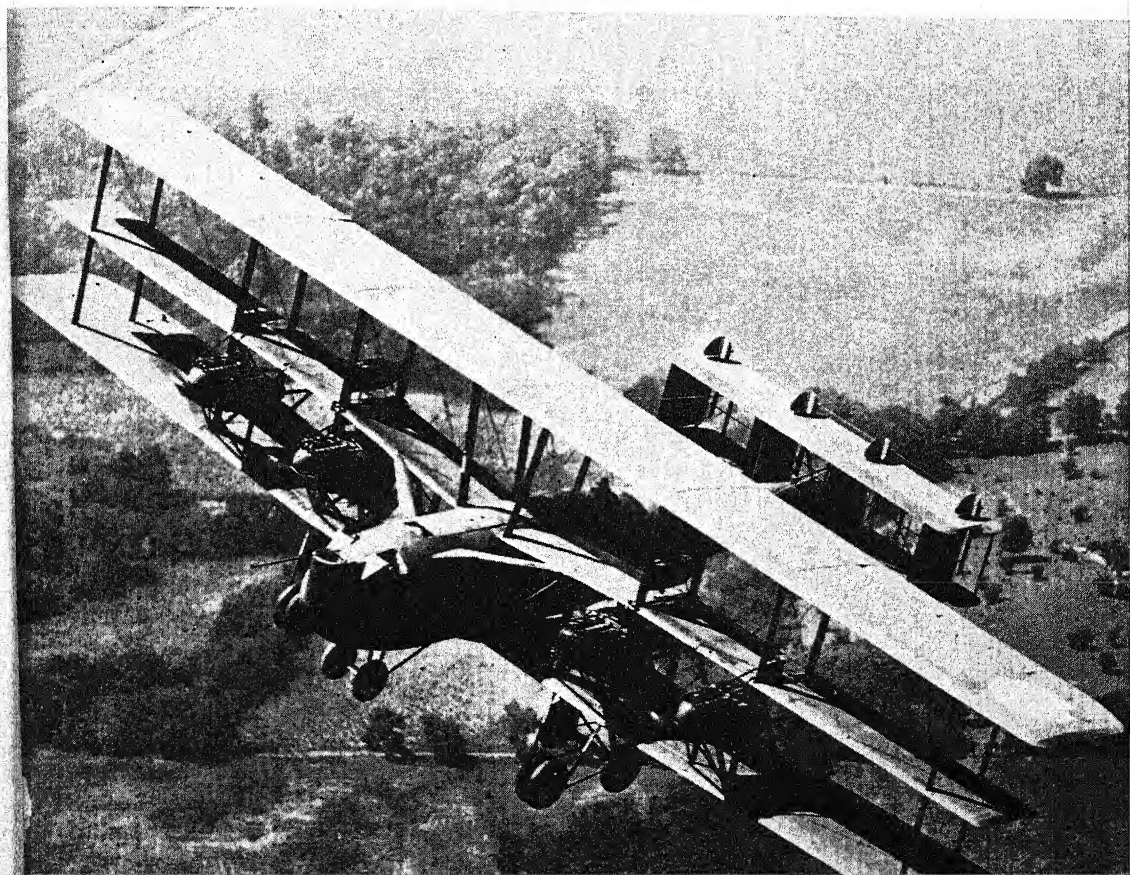
* I.e., administrative independence from the corps areas.

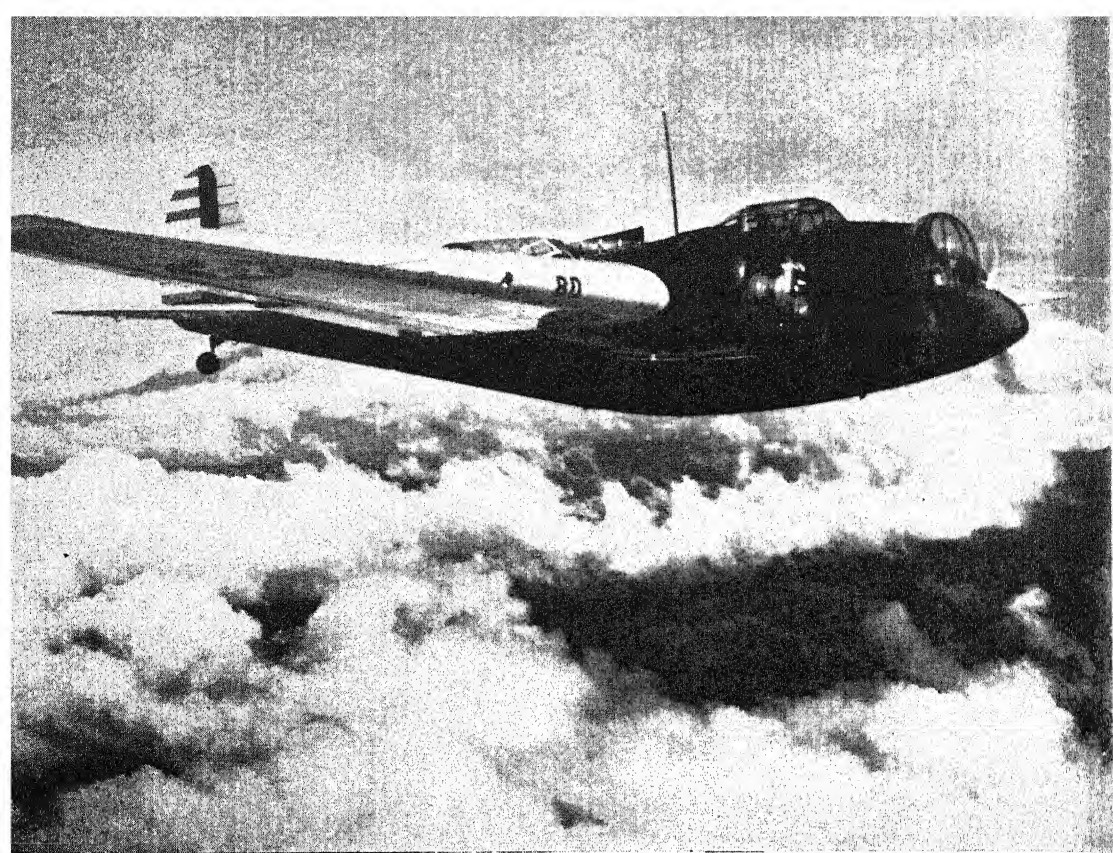
† See below, Chap. 4.



THE MARTIN BOMBER, 1921

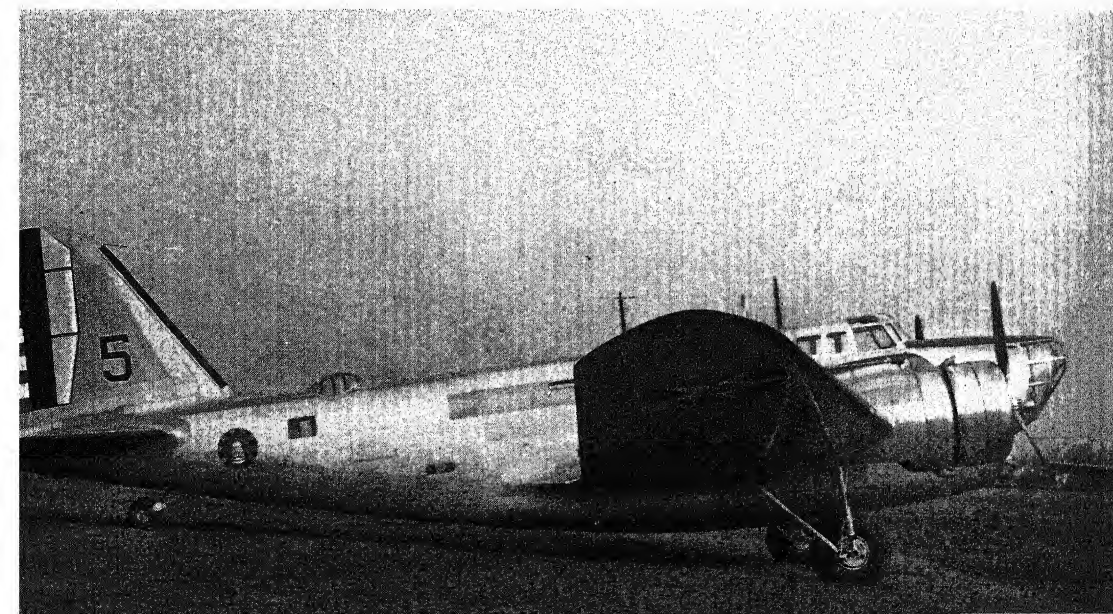
THE BARLING BOMBER, 1923





THE B-10B

THE B-18A



of personal ambition, but the most enduring factor in their long campaign was the conviction that air power was being stultified by a command structure lacking in understanding of the new weapon. As one pilot put it when questioned by the Morrow Board on his attitude toward his own rate of promotion, "They can call me Mr. George, aviation pilot, for the rest of my life as far as that is concerned, just so long as I might feel deep down in my heart that aviation is being given a proper part in the system of national defense."⁶³ A brief analysis of Air Corps doctrines as they developed in the period before 1939, and of Air Corps efforts to develop suitable equipment, should go far to explain the persistence of the struggle for independence.

The Development of Air Doctrines

In April 1938 an Air Corps major attending the Army War College prepared a paper entitled "Employment of Army Air Forces."⁶⁴ The study was an academic exercise done, as a civilian university would have phrased it, "in partial fulfilment of the requirements" of his course. The substance of his findings was probably familiar to most serious students of national defense policies, but his paper did present in brief form some striking anomalies. His analysis of the doctrines of air power currently promulgated by the several responsible agencies indicated a disturbing lack of uniformity. The Command and General Staff School, the Army War College, and the Joint Board acknowledged the importance of aviation but held that its principal function was the immediate support of the ground forces and Navy in furtherance of their respective missions. The Air Corps Tactical School claimed for air power a more decisive role, primarily consisting of long-range bombardment operations as an independent means of furthering the "Army Strategic Plan" or the "national objective." War Department directives seemed to "straddle" on this important issue, though inclining rather toward the former point of view. Thus those officers who were being prepared for the highest command or staff positions were subjected to conflicting opinions rather than to a consistent indoctrination.

Had the major's paper been even more academic, it might have gone on to show that this conflict in attitudes had appeared in an incipient form during World War I and had been sharpened by the organizational disputes of the postwar years. Indeed, it is impossible wholly to divorce the problems of *employment* of air forces and *control* of

air forces. But whereas the War Department had been able to determine the official pronouncements on employment of air forces as it had the organizational structure, the Air Corps had also developed its own combat doctrines. Long considered heretical, these doctrines were to be accepted as orthodox in World War II, and their development therefore should be described briefly here.

Army air doctrine, like the Army air arm itself, had started from scratch in April 1917. Poorly equipped and limited in tactical experience to a not-too-glorious chase of Pancho Villa through northern Mexico, the Aviation Section had previously found little incentive to formulate combat principles for a handful of obsolete planes. Americans had followed eagerly the highly publicized exploits in France of individual aces and of the Lafayette Escadrille, but the revolutionary implications of the new weapon were but dimly appreciated. In June 1917 requests for the large appropriation for aviation were bolstered by loose talk about "blinding the beast's eyes" and of a plan for "driving the German fliers out of the air and maintaining a constant raiding patrol [to] tear up the enemy's communication line."⁶⁵ But the plain truth is that Americans, whether in the Aviation Section or out, had no definite idea of how to accomplish those laudable ends—nor did they know whether there were other ends still more desirable.

Writing in 1920, General Mitchell contrasted the situation of the older military arms, possessed of a rich tradition and accepted strategical and tactical doctrines, with that of the Air Service: "All of our fighting tactics, methods of operation, organization, traditions, and cohesion had been evolved and developed on the European battlefields."⁶⁶ The initial lessons, he frankly admitted, had come from the Allies, and it is highly significant that the Air Service, with few preconceived ideas on aerial combat, had arrived in France at a time when many of the basic principles of air power were beginning to emerge in articulate form. American aviators, proving apt pupils, had modified the original lessons in light of their own problems and combat experience and, by Armistice time, had developed reasonably clear ideas of what they wanted to do in the air and how they proposed to do it. While war lasted, there had been little time to reduce those ideas to formalized doctrines, but Air Service veterans returning to the States in 1919 had distilled the fruits of their experience into training manuals which were already under revision when Mitchell wrote.⁶⁷ The potentialities of air power had been sensed rather than tested in 1918,

and with the rapid technological improvements of the next two decades the process of revision continued sporadically. It might therefore appear simple to trace in the successive training directives and manuals the evolution of the combat doctrines of the Army air arm.

That procedure, if followed literally and exclusively, would hardly repay the not inconsiderable effort involved in assembling a complete file of an Army publication. For, however accurately the manuals may reflect current teachings on the details of aerial combat, they seldom represent the most advanced thought within the Army air arm on the broader problems of air power. To this conservatism of thought—or expression—several factors contributed. Formulation of doctrine within the War Department was a function of the General Staff, and, while the air arm wrote its own manuals, those had to be watered down to make them acceptable to the ruling hierarchy of ground officers. Prevailing national sentiment encouraged the tendency to discuss war publicly only in terms of national defense in its narrowest sense, an attitude not wholly compatible with the offensive nature of the air weapon, and to keep all talk of attacks on nonmilitary objectives *sotto voce*. Finally, the whole subject of aircraft in national defense involved delicate Army-Navy relations, and in that dread no-man's-land prudent men trod softly.

So it was that the training guides, as textbooks for young officers, were not only dull in the inimitable style of Army manuals; on controversial issues they were at best noncommittal and at worst misleading. Joint Army-Navy agreements were so ambiguous as to permit widest latitude in interpretation. And hence, paradoxically, we must seek the air arm's underlying philosophy of warfare not in the official pronouncements but first in the public utterances of its radicals and later in the less widely disseminated thought of its most advanced school. This approach is not wholly satisfactory, but it is the only way to explain, other than by supposing a sudden reversal of opinion, the emergence shortly before World War II of a well-developed theory of warfare in which strategic bombardment played the predominant role. In its most essential features this theory was evolved by Mitchell in the mid-twenties; by 1939 it had become an article of faith privately held if not publicly proclaimed by the Air Corps.

Mitchell's concept of air power is more difficult to analyze than is that of his Italian contemporary, Giulio Douhet. Mitchell, a prolific

and hasty writer, was not always consistent. His works, usually slanted toward the organizational dispute and polemic in nature, were not without exaggeration in detail. His thought underwent important modifications between 1919 and 1930 as technological improvements (and perhaps the heat of controversy) led him to logical conclusions which had been only implicit in his earliest statements. But one axiom, with its corollaries, never varied. To him the airplane was first and last an offensive weapon. In the vast theater of the air there were no frontiers, no battle lines, no terrain features. Subject only to limitations of bases, operating range, and weather (and he was not inclined to overstress any as an adverse factor), the airplane with its speed and mobility could be applied against any enemy objective. Consequently, there could be no fixed defenses against aviation: "the only defense against an air force is another air force,"⁶⁸ and the destruction of the enemy's aviation is the necessary preliminary to a successful air offensive. It is only in respect to the nature of the air offensive that his thought shows any considerable development.

His analysis in 1919 of the "theory of operations"⁶⁹ which had guided the Air Service in those battles described in the preceding chapter shows how completely air employment had been dedicated to the immediate support of the ground armies. Save for units attached to army corps for observation and local defense, the Air Service had conceived as its primary mission the gaining of "complete ascendancy . . . in the air." On any desired front this was to be accomplished by adhering to principles of surprise, mobility, and concentration of forces. Available units of whatever category were to be massed into a striking force, but the significance attached to the air battle itself led Mitchell to speak of pursuit as "the most important branch of aviation . . . which fights for and gains control of the air," and to calculate a well-balanced air force as comprising 60 per cent pursuit, 20 per cent attack, and 20 per cent bombardment aircraft.⁷⁰ Yet control of the air was in itself but a negative thing, a means to some other end. For the Air Service in 1918, that end had been limited. Air ascendancy would free U.S. troops from enemy air attack and allow U.S. aviation to be employed offensively against the enemy's "ground troops, his trains, his depots of ammunition and supplies, and his railroad stations and lines of communications" and airdromes.⁷¹

Mitchell referred to his striking force as "our independent or what might be termed strategical aviation,"⁷² but its operations were

neither independent nor strategic as those terms were already understood in 1918. By that time the British Air Ministry had evolved a concept of the use of air power to enforce a decision, independent from or supplementary to the action of armies, through long-range bombardment of selected targets in Germany. Originally evoked by German air raids on London, this policy had gone far beyond mere retaliation. The mission of the Independent Force, as defined by its leader, Trenchard, contemplated nothing less than "the breakdown of the German Army in Germany, its Government, and the crippling of its sources of supply." With the forces available in 1918, Trenchard's efforts were perforce limited in scope. Sustained operations against large industrial areas were out of the question. Target selection, involving careful appraisal of intelligence, was based on the assumption that scattered raids could slow down production by fostering uncertainty among workers. Thus Trenchard could write that "at present the moral effect of bombing stands undoubtedly to the material effect in a proportion of 20 to 1."⁷³

In 1919 Trenchard might have had in the Inter-Allied Independent Air Force sufficient power to give a real test to the concept of air power entertained by the Air Ministry, and in that test the Air Service was to have participated. But because of the failure of the Anglo-American Handley-Page production program the Air Service had experienced no actual practice in strategic bombardment. Thus, however conversant Mitchell may have been with the activities of Trenchard's force, his thinking in 1918 seems to have been geared closely to the advance of the ground armies. His boldest plan, a project for a huge airborne operation scheduled for 1919, was designed as a means for reducing infantry casualties in the capture of Metz.⁷⁴ In the light of subsequent controversy it is significant that, although Mitchell's operations had been confined to support of ground troops on a stabilized front, his tactics had been too "independent" for the generals. Of the Meuse-Argonne battle Pershing wrote: "The tendency of our air force at first was to attach too much significance to flights beyond the enemy's lines in an endeavor to interrupt his communications," whereas in battle the proper function of aviation was "to drive off hostile airplanes and procure for the infantry and artillery information concerning the enemy's movements."⁷⁵

When Mitchell published in 1921 his first book on air power—*Our Air Force: The Keystone of National Defense*—he had begun to con-

sider some of the more far-reaching potentialities of his weapon. He pointed out that "Bombardment Aviation asserted itself more and more as the War developed." Victory had become a matter of "whipping the reserves" or delaying them, so that bombardment had been used to cut communications and to interfere with the manufacture of munitions.⁷⁶ In modern warfare with its idea of the nation in arms it was becoming difficult to distinguish between military and civilian objectives:

We must expect, therefore, in case of war, to have the enemy attempt to destroy any or all of our combatant or industrial forces—his attacks being entirely controlled by the dictates of strategy, and the means of bringing the war to a quick conclusion. It may be at times the best strategy to damage and destroy property, and to kill and disable an enemy's forces and resources at points far removed from the field of battle of either armies or navies.⁷⁷

But this unpleasant thought was advanced as a possibility, not as dogma. Mitchell could still believe that "it was an established fact that the principal mission of an air force was the destruction of the hostile air force"⁷⁸ and could deliver his most succinct summary of the role of air power without reference to attacks against civilian resources: "Our doctrine of aviation, therefore, should be to find out where the hostile air force is, to concentrate on that point with our Pursuit, Attack, and Bombardment Aviation, to obtain a decision over the hostile air force, and then to attack the enemy's armies on the land or navies on the water and obtain a decision over them."⁷⁹ Whatever the future might hold, war was still a matter of defeating the enemy's armed forces.

Mitchell's failure to push his theory to the limits he later reached need not be ascribed to prudence, but it should be realized that the War Department, with which he had not broken in 1921, was skeptical of the utility of strategic bombardment and that certain implications of total air warfare were repugnant to the public whose support he wished to elicit. But far more important in conditioning Mitchell's thought was the relationship between the geographical situation of the United States, its traditional ideas of national defense, and the potentialities of the air weapon.

Aviation requirements of the several powers, he pointed out, differed with their geographical and military situations. No one policy could be appropriate to an island nation threatened by continental air forces (e.g., England), to powers having contiguous land frontiers

(e.g., France, Germany), and to a relatively isolated, self-contained country like the United States.⁸⁰ In the past our safety had rested upon a strong Navy; so long as there was a fleet in being, the United States had been immune to large-scale invasions, and it had been unnecessary to maintain a large Army. But from 1919 Mitchell was convinced that the airplane had outmoded that system of national defense; his success in the experiments of 1921-23 merely confirmed a theory which, he explained, had received no wartime test because of the overwhelming strength of Allied naval power.⁸¹ He taught that with pursuit and attack planes an air force could establish air supremacy over a fleet, neutralize its anti-aircraft defenses, and in low-level attacks dispose of light warships and merchantmen. Bombers, equipped either with bombs or torpedoes, could sink the most heavily armed ships. Air power (aided perhaps by submarines) could thus interdict to any enemy ships all approaches to American shores and hence in itself constitute a sufficient protection against invasion. Surface units of the Navy, thus deprived of their prime mission, might at best find a limited career on the high seas beyond the operational radius of aircraft. In 1920 Mitchell believed that the Navy was the "first line of defense" but that, when equipped with carriers, "the air force will be the first line of defense and that surface navies, at least, will disappear."⁸²

The U.S. Navy was loath to "disappear," and consequently the naval aspects of air warfare assumed in Mitchell's writings an inordinate importance: he was writing a brief for the united air force, not a scientific treatise on war. But if the airplane offered an effective and relatively inexpensive protection against the traditional pattern of invasion, it constituted also a new and terrible threat against national security. As airplane performance improved, the new threat assumed a predominant part in Mitchell's thought. His *Winged Defense*, published in 1925, analyzed the danger and offered a solution. In future wars there would be no tedious process of wearing down the enemy's armed forces by attrition. Instead, aircraft would strike directly at the enemy's "centers of production of all kinds, means of transportation, agricultural areas, ports and shipping, . . . they will destroy the means of making war."⁸³ Wars would be sharp and short, inexpensive for the victor but terrible for the vanquished. Because war would affect the civil population more directly, the very threat of the new techniques would be a powerful deterrent to war, and so "air power

has brought with it a new doctrine of war . . . and a new doctrine of peace." ⁸⁴

Formerly the oceans had made difficult any attack against the United States, but the "coming of aircraft has greatly modified this isolation on account of the great range and speed which these agents of communication are developing." The heart of the nation's war potential lay in a triangle marked by Bangor, Norfolk, and Chicago.⁸⁵ The complex functioning of that area was so delicately balanced as to be highly vulnerable to air attack. Bombers could paralyze transportation by hitting a few chokepoints, could render governmental and industrial centers impotent: "A few shells, gas, explosive or incendiary, landed in Manhattan would cause a complete evacuation."⁸⁶ Disrupt the tightly integrated activities of that vital triangle, and "resistance is no longer possible and capitulation is the outcome."⁸⁷

Even in the air age geography favored the United States; it was far less open to air attack than European nations. But its immunity, only relative, was steadily diminishing with improved performance of aircraft. At first Mitchell was greatly concerned with the possibility of carrier-borne attacks against America once that fast "floating airdromes" had been adapted to the use of bombers. His belief, however, in the inherent superiority of land-based over carrier-based or float planes and the increasing range of the former made them appear the chief threat. In 1925 Mitchell pointed out that England could transport aircraft to the St. Lawrence area whence they could menace the whole of the vital triangle;⁸⁸ in 1927 he was claiming that parts of that region could be attacked directly from Europe.⁸⁹ His main concern, however, was with the northern approaches to the American continent. Airplanes already in service could easily cross the North Atlantic, staging from island to island with no overwater flight of more than 400 miles. In the North Pacific only the narrow Bering Strait separated Siberia from Alaska, and farther south the Aleutians constituted a natural avenue of approach. Eventually, he thought, aircraft would "follow the meridians straight over the top of the earth."⁹⁰

Against a waterborne attack an efficient air force would be the cheapest form of protection; against the new threat it was the only defense. Powerful air attacks resolutely pressed home could never be completely stopped, but their effects could best be held to a minimum by aggressive air action, and U.S. aviation should be organized accordingly. Defensive air units, chiefly pursuit, should be assigned for

local defense of strategic points—New York, the Canal Zone, Alaska, Hawaii, etc.—and other units should be attached to ground and sea forces as auxiliaries.⁹¹ But, so long as other powers were developing aviation for “striking their adversaries as far away from their own countries as possible,” the United States should have as its first objective the “creation of an air force capable of the greatest radius of action practicable under the conditions limited by personnel, material, and armament.”⁹² An efficient air force organized according to these principles “would be able to protect the country from invasion and would insure its independence but would not be able to subject a hostile country to invasion without leaving the country itself.”⁹³ Fortunately the string of northern islands led away from, as well as toward, the United States. They could be seized, held by air units plus a small ground force garrison, supplied if necessary by air transport, and used as a means of striking directly at the industrial heart of a European or Asiatic enemy.⁹⁴ War might become then first a struggle for air bases, followed by a strategic bombardment campaign. In the end ground forces must actually take over the enemy’s territory, but through its long-range operations the “influence of air power on the ability of one nation to impress its will on another in an armed conflict will be decisive.”⁹⁵

Under the guise of *Winged Defense* Mitchell was pleading the cause of an offensive weapon to be used in a fashion not yet sanctioned by custom. Highly sensitive to public opinion, he was somewhat handicapped in drawing a realistic picture by his concern with his audience. The wisdom of having entered World War I was widely questioned, so Mitchell had to assume that we would go to war only if attacked directly and that we would fight without allies who might provide advanced bases. He had come to consider that “the basis of air force power is the bombardment airplane” and that strategic bombardment was “the one outstanding development that occurred in the European War.”⁹⁶ Yet he was most specific in describing the effects of such warfare if applied against the United States; civilians are shown stampeding in New York under aerial attack but not in Berlin or Tokyo. It was the same sort of disingenuousness which made him speak of bombing the sources of an enemy’s productive power but “not so much the people themselves”⁹⁷—as if some subtle distinction would be made between factory and worker.

In his last book, a sort of primer for the layman called *Skyways*

(1930), Mitchell gave what is perhaps the clearest statement of his doctrine. He starts with a familiar concept:

War is the attempt of one nation to impress its will on another nation by force after all other means of arriving at an adjustment of a dispute have failed. The attempt of one combatant, therefore, is to so control the vital centers of the other that it will be powerless to defend itself. The vital areas consist of cities where the people live, areas where their food and supplies are produced and the transport lines that carry these supplies from place to place.⁹⁸

So far he has followed Clausewitz, but he now breaks sharply with the latter's thought. Armies and navies were developed as a means of preventing an enemy from getting at those vital spots, and war had become largely a matter of attacking the enemy's military forces, a slow and bloody affair since the machine gun had given so great an advantage to the defense.

[But the] advent of air power which can go straight to the vital centers and entirely neutralize or destroy them has put a completely new complexion on the old system of war. It is now realized that the hostile main army in the field is a false objective and the real objectives are the vital centers. The old theory that victory meant the destruction of the hostile main army, is untenable. Armies themselves can be disregarded by air power if a rapid strike is made against the opposing centers, because a greatly superior army numerically is at the mercy of an air force inferior in number.⁹⁹

Hence, in any future war "aircraft will project the spear point of the nation's offensive and defensive power against the vital centers of the opposing country."¹⁰⁰ In spite of its horror the new weapon would humanize war. "The result of warfare by air will be to bring about quick decisions. Superior air power will cause such havoc, or the threat of such havoc, in the opposing country that a long drawn out campaign will be impossible."¹⁰¹ A strong air force in being would discourage any potential assailants, but "woe be to the nation that is weak in the air."¹⁰²

There is no need here to assess the merits of Mitchell's theories; such a critique properly should follow rather than precede a narrative account of World War II.¹⁰³ That Mitchell's missionary zeal led him to exaggerate the potentialities of the airplane of the 1920's is apparent from even a cursory analysis of his books. But he wrote no Buck Rogers literature; his theories were grounded in sound technological knowledge and wide personal experience. It was precisely in those areas in which his own experience and that of his time was inadequate that his ideas were to prove least tenable. He was not alone in underrat-

ing the capacity of a civil population to bear up under aerial bombardment and of a bomb-wrecked industry to rise phoenix-like from its own ashes. His belief that aerial use of gas would figure prominently in the next war was shared by most of his contemporaries, and perhaps his main thesis can be fairly judged only if the horror of the atomic bomb be substituted for that of the gas bomb he relied on so heavily. In respect to the tactical means by which he would carry out his grand strategy, Mitchell's ideas were both sound and imaginative—witness his concept of airborne operations and of air supply for mobile aviation units, his mixture of deck-level and medium-level attacks on ships, his plans for a national system of airways and for an adequate weather organization, his realization of the significance of the great circle route in the northern latitudes. He stressed, too, the intimate relation between a civilian air industry and military air power, and, if he over-emphasized the ease with which civilian transports could be modified into bombers, he erred in that respect less than did many of his contemporaries, including Douhet.

While Mitchell's ideas on air power had raced ahead of the technological development of his weapon, those of the War Department had followed a more leisurely course. It was not unnatural that the Army's thinking should be largely conditioned by its experiences in France, where Pershing's victories had seemed to confirm traditional principles of war but little affected by the advent of aviation. For ten years or so after the Armistice the General Staff's chief concern with the airplane was for its utility in close support, and it vigorously and successfully opposed any official sanction of Mitchell's ideas of an independent air mission. Having been won over to the idea of a GHQ air force by the 1930's, the General Staff allowed a more positive role to the air arm in national defense without changing its position radically on the crucial issue of strategic bombardment.

The Dickman Board, appointed by Pershing in 1919 to record the lessons of the war, had stated that "nothing so far brought out in the war shows that aerial activities can be carried on, independently of ground troops, to such an extent as to materially affect the conduct of the war as a whole."¹⁰⁴ This came to be the official attitude of the War Department. Secretary of War Baker indorsed it in his annual report of 1919, decrying "upon the most elemental ethical and humanitarian grounds" the "aerial bombardment of back areas and inland cities" and rating observation and artillery spotting as the most im-

portant air activities.¹⁰⁵ Similar opinions were voiced frequently by Pershing,¹⁰⁶ and a year before his retirement they received their most authoritative formulation as doctrine in the Field Service Regulations, U.S. Army, revised by the General Staff and promulgated on 2 November 1923.

The authors of this manual derive their theory of war from Clausewitz. "The ultimate objective of all military operations is the destruction of the enemy's armed forces by battle. Decisive defeat in battle breaks the enemy's will to war and forces him to sue for peace."¹⁰⁷ Decisive results are obtained only by an offensive, which is made successful by the concentration of superior forces "both on the ground and in the air" at the proper place and time.¹⁰⁸ Such concentration, to be effective, involves teamwork. "No one arm wins battles. The combined employment of all arms is essential to success."¹⁰⁹ But the "coordinating principle which underlies the employment of the combined arms is that the mission of the infantry is the general mission of the entire force. The special missions of other arms are derived from their powers to contribute to the execution of the infantry mission."¹¹⁰ In short, infantry was still queen of battles, the air arm only one of her several handmaidens.

Sections devoted specifically to the Air Service elaborate this point of view. For observation and attack aviation its validity is obvious.¹¹¹ Pursuit, the "most vital element of the air service," establishes and maintains air supremacy by its "essentially offensive" operations, thus affording effective protection to other air categories and to ground troops.¹¹² The enlightening proposition that the "mission of bombardment aviation is the bombardment of ground objectives" is amplified by a designation of the most important targets. These lie "beyond the effective range of artillery," but apparently not far beyond; they consist of objectives "vital to the functioning of the enemy's line of communication and supply."¹¹³ There is no mention of strikes against the industrial system which constituted the source of his supply; presumably such operations were not to be considered profitable. The chief mission of aviation was close support of ground forces.

The Field Service Regulations had not been revised in whole when World War II began. But, being general in character, they had been framed with the idea that each arm would describe its principles of combat in its own training regulations,¹¹⁴ and in the Air Service (Corps) these were subject to periodic changes. The revisions reflect,

with something of a time lag, the several organizational changes in the air arm which have been noted above. The influence of the General Staff over air doctrine is clearly shown in Training Regulation 440-15, Fundamental Principles of Employment of the Air Service (26 January 1926).

This manual states that the organization and training of air units is to be "based on the fundamental doctrine that their mission is to aid the ground forces to gain decisive success."¹¹⁵ This principle is to guide all operations, but the nature of the aid will vary with the type of aviation units involved. Some units must operate as an organic part of the ground command, and their aid will be direct; others may "co-operate by indirect support in the area of the ground battlefield or at a distance therefrom." Such indirect support is peculiarly the function of the GHQ air force, which "is self-contained and is capable of rapidly shifting its activities from one theater of operations to another, transporting the equipment and personnel necessary for its efficient operation and upkeep." At outbreak of war it first gains control of the air, then attempts to disrupt enemy communications and movements. Thereafter it assists the army directly in battle or "indirectly, when conditions are favorable, by carrying out special missions at great distance from the ground forces" against critical areas of the enemy country. And the GHQ air force is of special value in coast defense, both in reconnaissance and in attacks on approaching fleets.¹¹⁶

Compared with Mitchell's bold claims this was pale stuff, and it was a fitting coincidence that his resignation from the Army came on the day after TR 440-15 was published. But its authors, following in all respectability the recommendations of the Lassiter Board, had at least ascribed to GHQ aviation something of the functions of a striking force; further the Air Service was not then prepared to go. Even at the Air Service Tactical School at Langley Field the teaching was far from radical. Textbooks published there in 1926 constitute perhaps the most detailed analysis of employment of military aviation yet to come from a War Department agency. That on Bombardment specifies that the course is to deal primarily with "operations in support of, or in conjunction with, large forces of ground troops" rather than with bombardment "in what may be termed 'independent air force operations.'" Hence the approach is always "from the standpoint of various ground situations," both in open warfare and on a stabilized front; even strategic bombardment is so treated.¹¹⁷ The authors, unlike

Mitchell, are dubious of the morale value of bombing civilian population centers, and they deplore the fact that "the strategical employment of bombardment in stabilized warfare is popularly conceived to be the true role of that class of aviation"—a concept for which Mitchell was largely responsible. Such use of the bomber "will have an important bearing on the outcome of the war, but it must not take precedence over the support of ground operations by proper tactical employment."¹¹⁸

In April 1928 the commandant of the same school—now called the Air Corps Tactical School (ACTS)—sent up through channels for War Department approval a paper, "The Doctrine of the Air Force."¹¹⁹ The paper reflected in its treatment of crucial issues the very modest organizational gains authorized in the Air Corps Act of 2 July 1926. The Office of the Chief of the Air Corps rejected the paper on the score that it subordinated the air force to the ground force and went on to develop its own concept of war, which was borrowed directly from Mitchell. This branded as unsound the basic principle of the Field Service Regulations:

The objective of war is to overcome the enemy's will to resist and the defeat of his army, his fleet or the occupation of his territory is merely a means to this end and none of them are the true objective. If the true objective can be reached without the necessity of defeating or brushing aside the enemy force on the ground or water and the proper means furnished to subdue the enemy's will and bring the war to a close, the object of war can be obtained with less destruction and lasting after effects than has heretofore been the case. At present the Air Force provides the only means for such an accomplishment.¹²⁰

Within a very few years this was to be the dominant theme at the school, but its textbook, *The Air Force*, published in 1931, was less unequivocal in its estimate of air power. The manual taught that "victory is practically assured to the commander whose air force has gained and can maintain control of the air, even if his ground forces are merely equal or somewhat inferior to those of his enemy." But it hedged in predicting that "the next war will begin about where the last ended, and the air force will be subordinate, although a most important auxiliary, to the ground forces."¹²¹

In general, these manuals were hardly consistent with national policies. The mission of the Army was defense of the United States and its outlying territories, but the theory of war therein described is wholly that of the strategic offensive. Both the Field Service Regula-

tions and the Langley Field treatise on bombardment are deliberately limited to warfare against a major opponent in a land theater of operations. Coast defense and landing operations are excluded; where and how air and ground forces were to come to grips with an enemy is not explained. Essentially the war described is that of 1917-18, but without reference to the allies who had provided the Army with bases and a lodgment in Europe. It was impolitic in the 1920's to speak of expeditionary forces or allies, but without them the concept of air power as an auxiliary to great land forces was meaningless.

During the next decade discussion within the War Department of the Air Corps mission assumed a more realistic tone. Here again Mitchell's influence was important; if he had been somewhat circuitous in his approach, his treatment of air power had at least been couched in terms of concrete problems. But the deciding factor was the development of new strategic plans for national defense, initiated in accordance with the implications of the MacArthur-Pratt agreement of 1931 and shaped more decisively thereafter by consideration of the growing unrest in Europe and Asia. It has already been shown how conflicting opinions as to the air mission led eventually to the creation on 1 March 1935 of the GHQ Air Force.* That reorganization called naturally for a reformulation of doctrine, and, since the idea of such a force had long been associated with air operations of a quasi-independent nature, exponents of strategic bombardment hoped for a more positive statement of the importance of that type of mission. That hope was unfounded. While recommending the establishment of the GHQ Air Force, both the Drum Board (12 October 1933) and the Baker Board (18 July 1934) had denied the possibility of an air attack on the United States and of an effective defense by aircraft alone against other modes of invasion.¹²² But they did allow that GHQ aviation would prove a valuable adjunct to coast defense. The Baker report summed up this attitude in a dictum which was often quoted in subsequent arguments: "The development of aviation has increased the power of the offense where the countries at war border on, or are close to, each other, and has increased the power of the defense where the contestants are widely separated. This new arm is, therefore, advantageous to our national policy."¹²³

If U.S. planes could not attack European cities, foreign land-based aircraft could not operate against this country without aid of a large

* See above, p. 31.

expeditionary force, and GHQ aviation, in addition to its role of close support, would assist materially in offshore reconnaissance and interception of an enemy expedition. But such functions required a closer definition of the respective responsibilities of the Army and Navy, a problem that was referred to the Joint Board of the Army and Navy. In a report, "Doctrines for the Employment of the GHQ Air Force," 26 September 1934, the Joint Board accepted in substance the recommendations of the Drum and Baker reports, but the tendency of both these reports to discount the role of air power was reflected in a much less clearly defined statement of Air Corps responsibilities in national defense than had been hoped for in 1931.¹²⁴ A year later the Air Corps mission was described more formally in a revision of Joint Action of the Army and Navy, promulgated on 11 September 1935. This provided that the Army air component was "to operate as an arm of the mobile Army, both in the conduct of air operations over the land in support of land operations and in the conduct of air operations over the sea in direct defense of the coast"; under certain conditions Army aviation was also to conduct "air operations in support of or in lieu of naval forces."¹²⁵ These passages were ambiguous enough to be acceptable to both Army and Navy and too ambiguous to be of service to either.

In October 1934, Gen. Douglas MacArthur, Chief of Staff, had forwarded to appropriate commands the Joint Board's paper on employment of the GHQ Air Force.¹²⁶ In anticipation of the imminent reorganization of the Air Corps he directed that air doctrines be restated "with a view to a broader understanding of the Air Corps' place in the scheme of national defense and in expectation of doing away with misconceptions and interbranch prejudices."¹²⁷

On 21 December, Brig. Gen. C.E. Kilbourne of the General Staff's War Plans Division forwarded to the Chief of the Air Corps, as a "sighting shot," a draft proposal for "Doctrines of Army Air Corps."¹²⁸ This paper drew heavily upon the Drum and Baker reports, though it gave to the counterair activities of the GHQ Air Force a greater prominence than had either. Kilbourne's draft was criticized severely by members of the Air Corps Tactical School and of the Office of the Chief of the Air Corps, including Maj. Carl Spaatz, because it subordinated strategic bombardment to attacks on enemy air power.¹²⁹ A somewhat more acceptable statement appeared in a revised edition of TR 440-15, Employment of the Air Forces of the

Army (15 October 1935). Ostensibly a compromise, this manual inclined toward the General Staff's point of view. In listing functions of the GHQ Air Force "beyond the sphere of influence of the Ground Forces," it included strikes at "military and civil objectives alike"—air installations, shipping, munitions and aircraft factories, transportation, etc. There is no effort to establish absolute priorities, since the relative importance of objectives varies with the situation, but the judgment is made that as targets "air forces [are] generally of primary importance."¹³⁰ There were in TR 440-15 few statements to which the Air Corps could take exception, but its very lack of emphasis made it a weak instrument for indoctrination. The manual remained in force until 1940, but a sampling of Air Corps opinion during that interval will indicate that its tenets were by no means universally accepted.

Within the Air Corps two fairly distinct points of view may be discerned, but it is difficult to determine any principle of alignment within the several air agencies. One attitude, which for convenience may be called that of compromise, stressed on political grounds the defense mission of aviation, but as an interim rather than a permanent policy. This way of thinking may be seen in an Air Corps Tactical School critique of General Kilbourne's proposed doctrines and in a counterproposal of 31 January 1935 called "Suggested Foundation for GHQ Air Force Doctrine."¹³¹ The latter starts with the assumption that "national policy, geographic location of bases and the present range of planes which does not permit the air attack of the national structure of any probable enemy, dictate the role of the GHQ Air Force as one of air defense and fix its true objective."¹³² In keeping with this opinion, first priority is given to preventing an enemy from setting up air bases within range of the United States, second priority to defeat of enemy forces operating from such bases.

Similar conclusions may be found in a study, "The Functions of the Army Air Forces," presented by the Air Corps Board on 29 October 1936. Assuming that, with current performance of aircraft, sustained attacks could not be carried out against the homeland of any major foreign power from bases in U.S. territory, the board declared that the Air Corps should be immediately and primarily concerned with national defense and the preservation of internal order. Until an adequate defense was assured, "the diversion of effort incident to preparations for strategically offensive operations is not justified."¹³³

The real intention of this study was to secure for the Air Corps a

more specific defense mission than that implied in the Joint Action of 11 September 1935. The recommendations contained therein were indorsed by the Chief of the Air Corps, General Westover, and forwarded to The Adjutant General for action; but by the summer of 1937 it was evident that no revision in the Army-Navy agreement would be made. By the following year the international situation was such that national defense had come to assume a new significance, and the concept of hemisphere defense was being shaped. On 17 October 1938 the Air Corps Board completed a study, "Air Corps Mission under the Monroe Doctrine," in which the primary air role was conceived as defense against hostile efforts to operate from air bases established in the Americas.¹³⁴ This concept, which subordinated both antishipping strikes and offensive strategic bombardment to counter-air activities, was to exert a tremendous influence over air planning and designing during the emergency years of 1939-41.*

Meanwhile there was no lack of a more aggressive doctrine within certain circles in the Air Corps. Expounded by some officers in OCAC, these doctrines received special attention in the Air Corps Tactical School, which was moved from Langley Field to Maxwell Field, Alabama, in 1931. The establishment of the GHQ Air Force, however much that force might be considered as a defensive weapon, seemed to many officers as a means by which a theory of offensive air war might be revived. Even when the school in 1935 had emphasized the defensive role in its comments on Kilbourne's paper, the transitory nature of that role had been stressed: "There is no intention anywhere in these comments of not conveying the thought that the principal and all important mission of air power, when its equipment permits, is the attack of those vital objectives in a nation's economic structure which will tend to paralyze that nation's ability to wage war and thus contribute directly to the attainment of the ultimate objective of war, namely, the disintegration of the hostile will to resist."¹³⁵

That theme, from 1935 on, assumed even larger proportions in lectures given at the school. A full roster of the instructors might prove of high significance for a history of World War II, for it would include an important proportion of officers—many still in junior grades—who were to direct air strategy, as members either of the AAF Headquarters staff or of some joint or combined agency: Hal George, Ken Walker, Tony Frank, Sandy Fairchild, Larry Kuter, Possum Hansell,

* See below, Chap. 4.

and others.¹³⁶ These officers had come up in an atmosphere permeated with Mitchell's ideas, and they turned to such other theorists as were available. It is often difficult, because of the multiple authorship of military documents and the poverty of information concerning officers' reading habits, to trace the evolution of a given idea in the Army. One of the instructors at the Tactical School has indicated some of the literature absorbed during this period:¹³⁷ Clausewitz (who was "right in his time"); Frank Simon's *The Price of Peace* ("a very good book, too"); Liddell Hart; Goering ("the only foreign predecessor we had to follow—except old Douhet"). One might suppose that Douhet, who "really struck the first blow," was most useful; his work had been made available in the Air Corps in an incomplete mimeographed form, done into English from a French translation.¹³⁸ But even he added little to what could have been gained from a few hours devoted to Mitchell's works.

Whatever the source of inspiration, the theory of air war expounded at the Air Corps Tactical School may be summarized under the following points:

1. The national objective in war is to break the enemy's *will* to resist and to force him to submit to our will.¹³⁹
2. The accomplishment of this objective may entail actual destruction of his *power* to resist, or merely the threat thereof, but in either case it requires an offensive type of warfare. Hence the true mission of all components of the armed services is to exert maximum destructive powers on the most vital enemy objectives.¹⁴⁰
3. The immediate mission of the armed forces may be: defeat of the enemy's army, navy, or air force; the occupation of his homeland; pressure against his national economy; or operations directed against vital centers within his country. Under certain conditions the threat of a successful accomplishment of such missions will be sufficient to enforce our will upon the enemy.¹⁴¹
4. These military missions are best carried through by the co-operation of the three arms: air, ground, and naval. Each has its peculiar functions and limitations. Thus aviation can aid ground forces to gain territory, but only ground forces can occupy an enemy's land. Aviation alone cannot protect our merchant marine or our troop movements by sea, but it *can* unaided accomplish the other functions of sea power—defense of the nation against waterborne invasions and reduction or elimination of enemy merchant shipping. And, of the three arms, only aviation can contribute significantly to all of the designated missions.¹⁴²
5. The special mission of the air arm then should be to attack the whole of the "enemy national structure." Under conditions of modern warfare the military, political, economic, and social aspects of a nation's life are closely and absolutely interdependent, so that dislocations in any one will bring

- sympathetic disturbances of varying degrees of intensity in all other aspects. Economy of effort requires that each arm attack that phase against which its weapons are most potent.¹⁴³
6. Modern war with its extravagant material factors places an especial importance upon a nation's economic structure and particularly upon its "industrial web." A nation may be defeated simply by the interruption of the delicate balance of this complex organization, which is vulnerable to the air arm and directly to neither of the other arms. It is possible that a moral collapse brought about by disturbances in this close-knit web may be sufficient to force an enemy to surrender, but the real target is industry itself, not national morale.¹⁴⁴
 7. Future wars will begin with air action. This fact makes it necessary to maintain an adequate air force, since it would be impossible to build one if the enemy ever gained air control over our territory. Conversely we should strike at his industry as early in the war as possible. In such an offensive the chief limiting factors are the range of our planes and the location of our bases; obviously, we must place ourselves within striking distance of the enemy's vital points.¹⁴⁵
 8. With the present range of aircraft we cannot strike across the oceans against any of those powers who are potential enemies. One remedy for that situation is purely technological: we may be able to extend the range of our planes. Another is political: "If we were dragged into a war which had been precipitated by other great powers among themselves, we would inevitably find allies. Those allies, being themselves within the sphere of air influence, could provide operating bases for our Air Force. It is possible, with modern aircraft, to fly direct to such bases from the Western Hemisphere. Thus we could bring our military power to bear at once. . . . Such operations would be initially almost wholly dependent upon supplies furnished by our allies."¹⁴⁶
 9. Given such allies and the bases they could furnish, we would have freedom to choose between the enemy's armed forces and his national structure as a target, and we should designate the latter as the primary objective. An attack against his industrial fabric requires more than random strikes at targets of opportunity, and so "it is a function of peacetime strategy to weigh the war potential of possible enemies and uncover those relatively defenseless areas that can be so profitably exploited by our attack."¹⁴⁷

This then was, in essence, the doctrine of air war taught in the Air Corps' most advanced school at the time when the GHQ Air Force provided, on paper at least, a suitable striking force. The influence of Mitchell's teachings is apparent, but two variations were to be of great significance when World War II put the theories to actual test. Mitchell had talked of seizing island bases to extend the range of our striking force; instructors at the ACTS, in a changing political milieu, were looking toward allies, and even in the middle thirties those allies, in addition to our Canadian and Latin-American friends, could have

been only England or France. And, whereas Mitchell had placed great importance upon the moral effects of bombing, these disciples of his stressed rather the material effects of the air weapon.

In any event, the newly formulated doctrine involved three practical measures. One was the acquisition of more advanced bases. That was a political matter, wholly foreign to the Air Corps, which was to be effected in 1940-41 by actions of other government agencies. A second was the study of profitable targets within the national structure of potential enemy countries. This was begun, on a modest scale and not without opposition from the General Staff, in the tiny economic analysis branch of the intelligence section, established in the OCAC in 1939.¹⁴⁸ But the one measure which was of most immediate concern to the Air Corps was purely technological—increasing the range of its bombardment planes. This was not in 1935 a new issue. In the 1926 edition of TR 440-15 it had been stated that “it is necessary, therefore, to determine, from a purely tactical standpoint, what purposes airplanes are to serve in war, and to build different types with appropriate characteristics.”¹⁴⁹ Once the Air Corps had chosen as its chief function the destruction of an enemy’s “national structure,” this involved the development of a bomber of long range and great bomb capacity. These same characteristics were equally important if the air arm was to be considered merely as a weapon for national defense. By 1935 the successful flight of the Boeing B-17 had indicated what could be accomplished by American industry working in harmony with the OCAC. But the Air Corps was not content. The student officer whose study served as an introduction to this section showed his appreciation of the true situation when he remarked that the Air Corps building program (in 1938) “indicates that the primary role is long range strategic operations.”¹⁵⁰

The building program, like the doctrine it was meant to implement and the organization which was deemed necessary for a successful air war, had not always enjoyed the desired support of the War and Navy departments. Only two months after the major submitted his report (29 June 1938) the Joint Board arrived at the following conclusion: “Based on the present situation it is not considered probable that the Army Air Corps will be called upon in war to perform any missions that require the use of reconnaissance and heavy bombardment planes of greater practical ferrying range, greater tactical radius, and greater carrying capacity than those of the B-17.”¹⁵¹ A brief account of

material development in the period 1919-39 will indicate how much of the energies of the Air Corps was devoted to the search for a long-range heavy bomber and how intimately that effort was tied to the organizational and doctrinal issues which have just been described.

Evolution of the Long-Range Bomber

The Air Service emerged from World War I with a keen sense of its responsibility for a solution to the related problems of what the most effective air weapon might be and how that weapon should be utilized. Perhaps it was the novelty of the air weapon itself and the realization of its rapid rate of obsolescence that gave to the small group of airmen who remained with the service a fresher approach than was common in America's peacetime military establishment. Perhaps it was the impetus provided by a wartime experimental program which bore its chief fruit after, rather than before, the termination of hostilities. Perhaps, too, an additional spur to action came from the airman's desire to prove his case in the face of official disinclination to admit the validity of his claims. At any rate, appropriations by the Air Service for research and development during the three fiscal years immediately following the war were higher than at any time thereafter prior to 1936. Indeed, they continued through the fiscal year 1926 to represent a greater percentage of the funds annually appropriated for the Air Service than would be allotted to these purposes in any of the subsequent years.¹⁵²

The figures taken alone are none too impressive: four and a half million for 1920, just under six million for 1921, just over four million for 1922, and a straight three million for 1924. But these sums acquire significance when considered with the fact that direct cash appropriations for support of the Air Service had fallen precipitously from the wartime peak of 952 million for the fiscal year 1919 to the round figure of twenty-eight million for 1920.* Four years later the total had been pared to twelve and a half million, and for the fiscal year immediately preceding passage of the Air Corps Act of 1926 appropriations amounted to less than sixteen million.¹⁵³ Thus in 1924 the Air Service's allotment for research and development represented nearly 25 per cent of its total appropriation for that fiscal year.

These first postwar years—years of the initial struggle for recogni-

* The figures include only "direct" appropriations and omit sums expended by such services as the Quartermaster and Finance for the benefit of Army aviation.

tion—saw also the development of facilities and policies upon which the Air Corps' experimental program would depend. McCook Field at Dayton, Ohio, had been selected as an experimental center for the Air Service in 1917. During the war the Engineering Division established there had devoted its attention chiefly to modification of European models for American manufacture. Essentially that was a production rather than a research job, but, with the coming of peace, the emphasis shifted toward the latter field.¹⁵⁴ As in the great industrial laboratories of America, however, the research efforts of the Air Service naturally tended to fall under the general classification of applied science. Experiments were conducted with a view primarily to practical military need, and necessarily the testing of newly developed equipment went hand in hand with the search for improved designs, better fuels, and more adaptable materials. In June 1926 the Engineering Division and the Fairfield Air Depot, also located in the Dayton area, were joined under a newly created Materiel Division which became responsible to the Supply Division of the Office of the Chief of the Air Corps. After a transfer in the following year of the Materiel Division from McCook to better quarters at near-by Wright Field, that installation became the chief center of Air Corps research, engineering, and testing activities.¹⁵⁵ Its experimental facilities represented an investment valued in 1939 at about ten million dollars. In keeping with long-established policy, 1,759 of a total personnel of 1,984 were at that time civilians.¹⁵⁶

Fortunately, the Air Corps did not have to depend wholly upon its own resources. The NACA, established in 1915 with a congressional mandate to undertake "scientific research on the fundamental problems of flight," conducted experiments in its Langley Memorial Aeronautical Laboratory at Langley Field, Virginia, upon which the Air Corps in common with other agencies of the government drew repeatedly. Similarly, the Air Corps became indebted to the Civil Aeronautics Authority and its predecessors in the Department of Commerce which were charged with responsibility for the safety of civil aviation. Especially helpful was the Bureau of Standards, which on request undertook projects in the development of such essentials as fuels, lubricants, and alloys.¹⁵⁷ For the development of radio and radar equipment it was necessary to look to the Signal Corps, for until October 1944 that organization would retain control of experimental work in the important field of communications.¹⁵⁸

Of special significance was the Air Corps' policy of conducting its own experimental program in an intimate association with the aircraft and allied industries. Established during the years immediately following the war, when as yet commercial aviation had not advanced to a point that would support the infant aircraft industry, that policy was continued thereafter as a means for maintaining in a state of readiness industrial facilities and staffs of great importance to the military potential of the nation. The Air Corps consistently opposed a popular view that planes designed for commercial purposes could be converted to military use, except for such an activity as air transport. But that conviction was regarded as strengthening rather than weakening the argument for experimental and educational contracts that would prepare the industry for conversion to military production in time of war, and that meanwhile would permit the Air Corps to borrow for its own purposes some of the enterprising spirit of a new industrial undertaking. The procedure established in the Air Corps Act of 1926 called for design competitions among manufacturers as a preliminary to the drafting of developmental contracts. It became a traditional policy to recognize the right of the contractor to amortize experimental costs with income from later production orders.¹⁵⁹ The funds actually devoted to research and development, in other words, were by no means limited to those which were specifically so budgeted.

Indeed, the airman's inclination to place the emphasis on experimental work met an early resistance from higher authority, even in the Air Service itself. For example, in October 1921 the acting chief of the Supply Group in Washington formally expressed this view:

If we continue this policy of buying a dab of every kind of experimental type of equipment that the Engineering Division in Dayton passes upon with the idea of conducting a service test, it would not be long before the entire Air Service would be engaged in service test work, and, should an emergency develop, it would be impracticable to put any kind of an organization in the field with the standard type of equipment.¹⁶⁰

The problem, of course, was fundamental, and one which at all times in some degree confronts authorities charged with responsibility for military aviation. Just how shall the requirement of an air force ready with standard equipment for any emergency be balanced against the demand for a timely anticipation of new developments in a field of the most rapid technological growth? When stringent budgetary limitations exist, the problem is particularly difficult. And when, in addi-

tion to strict budgetary limits, the mission assigned to the air force denies the necessity for a full exploration of the independent function of the air weapon, the experimental program faces a double hazard.

The Air Corps Act of 1926 had the effect of shifting the emphasis from experimental development to the procurement of standardized equipment. In addition to fixing the authorized strength of the Air Corps at just over 20,000 men of all ranks, the section of the act calling for a five-year program of expansion set as the goal a force of 1,800 planes. Such an objective did not necessarily preclude the possibility of a continued and vigorous experimental program. But over the ensuing five years appropriations requested by the Air Corps were cut through action of the War Department and the Bureau of the Budget on an average of close to 40 per cent.¹⁶¹ And while annual appropriations now averaged over twenty-five million, or approximately double the appropriation for 1924, the Air Corps' allotment of funds to research and development remained at the figure of just over two million to which it had fallen since that year. Not until the fiscal year 1933 would the sum allotted to these purposes again exceed three million dollars.¹⁶²

It is difficult to avoid the conclusion that some of the criticism of experimental work in the Air Service after the war had sprung from a lack of sympathy with the broad objectives of the Army's airmen. As late as 1936 the Air Corps would be charged in an official report with having been led astray by the allurements of a quest for the ultimate in aircraft performance at the expense of practical military need.¹⁶³ But technical and financial limitations, together with an incomplete development of Air Corps doctrine, apparently prevented the raising of any serious doctrinal issue in connection with the materiel program until the late 1920's. As already noted, even Billy Mitchell had emerged from his experiences in World War I with the conviction that pursuit represented the most important branch of military aviation, a view that found reflection in the experimental program of the Air Service. The observation plane also received much of the Engineering Division's attention in the search for a substitute for the DH-4 of World War I, and the official designation of "attack" plane had its origin in 1922 to describe observation types specially equipped for ground strafing. As for the bombers developed, technical barriers kept their performance well within limits that would be considered appropriate for a mission in support of ground armies.¹⁶⁴

It is true that the twin-engine MB-2, a modification of the Martin bomber of war years, had been followed by the Barling experimental triplane NBL-1, which with six engines, a span of 120 feet, and weight of 27,703 pounds (empty) dwarfed all service models of earlier date than the 1930's.* The plane provided a significant indication of an early interest in the big bomber, but it proved a disappointing experiment.¹⁶⁵ On the other hand, the twin-engine Curtiss NBS-4 of 1924 showed marked improvement over the MB-2. Had funds been more liberally provided, there might have been further experimentation with much larger bombers. A newly formed Bombardment Board in the fall of 1926 favored the multi-engine bomber, partly because of its greater safety in comparison with the single-engine plane.¹⁶⁶ That same year, however, the Engineering Division at Dayton emphasized in a study of its own the technical difficulties and the high cost that would be involved in attempts to build and operate planes with more than two engines.¹⁶⁷ Not until the 1930's would anything comparable in size to the NBL-1 be attempted again.

Meanwhile, great progress was made with the two-engine bomber. Between the MB-2 of the early twenties and the B-10 of the early thirties the service ceiling was raised from 7,700 to 24,400 feet, the maximum speed from 98 miles per hour to 213, and the normal bomb load from 1,040 to 2,260 pounds. Fabric and wood had given way to an all-metal construction; the biplane had been displaced by the monoplane; and in the quest for cleaner lines the retractable landing gear had been introduced.¹⁶⁸ If the advances made held for the airman a promise of bigger and better planes to come, it was still true that the B-10, with a range of 600 miles, raised no question of its practical military value.

As early as 1928, however, sharp differences had developed between Air Corps officers and the War Department over plans for bomber construction. The airmen argued for the development of two distinct types of bombing planes: (1) a plane of high speed, short range, defensive power, and small bomb load for use in day operations, and (2) a bomber of minimum defensive strength designed to carry heavy bomb loads over longer distances in night operations.¹⁶⁹ A step toward such a specialization of function had been taken when two years earlier the LB-1 became the first Army plane to bear the designation

* For purposes of comparison it may be noted that the MB-2 had a span of 74 feet, 2 inches, and weight of 7,069 pounds.

of "light bomber."¹⁷⁰ Since the practical difference between the light and other bombers was as yet not too great, the distinction thus established had for the moment only a limited significance, but that it carried the promise of serious controversy was soon to be demonstrated. In opposition to Air Corps proposals for specialization the War Department in 1928 advocated, partly for reasons of economy, concentration on a single all-purpose bomber.

Despite vigorous objections from such officers as Maj. Hugh J. Knerr, then commanding the 2d Bombardment Group, the Chief of the Air Corps in June directed the Materiel Division at Dayton to proceed with the development of a twin-engine plane that would serve for both day and night bombing and, in addition, for observation missions.¹⁷¹ A prompt protest from the Materiel Division having served to reopen the question, opponents of a "mediocre all-purpose airplane" renewed their efforts in a discussion that continued into the following year. Perhaps because it seemed politically advisable, they concentrated on an attempt to demonstrate the advantage in a specially designed day bomber. The Bombardment Board and the Tactical School joined in proposing for this purpose a plane with speed of 160 miles per hour, a service ceiling of 18,000 feet, a radius of 250 miles, bomb load of 1,200 pounds, and armament of 6 machine guns.¹⁷² And in February 1929 the authorities yielded to the extent, at least, of directing the Materiel Division to develop a modified version of the Curtiss XO-35 observation plane as a fast day bomber.¹⁷³

But that success represented something less than a complete victory. Though a principle of great importance to the future of the Air Corps had been preserved, at any rate for the time being, the decision nevertheless left an open question as to how far the airmen would be permitted to go in the development of types other than those specifically designed for support of ground forces. In fact, it is not easy to determine the extent to which the full implications of the controversy were appreciated by either side at the time. The airmen themselves had based their arguments on a distinction between day and night bombardment, in accordance with experience in the first World War, and it is significant that the Air Corps Tactical School on second thought expressed its concern in 1930 over the confusion likely to result from such a distinction.¹⁷⁴ It felt that, while the one type normally would be used chiefly in the day and the other at night, to distinguish between light and heavy bombers would be less misleading; and such a usage,

with the addition in time of "medium" and "very heavy" categories, became the rule. There was reassurance as to the future of heavy bombardment in the decisions leading by way of the 1931 competition to the development of the B-10. Its many superior qualities, however, did not include a range in excess of what was generally accepted as useful for a supporting mission, and it was already becoming apparent that the real test of policy would come on a question of range.

The problem of extending the effective range of the airplane had been a major concern of American aviation throughout the 1920's. Witness the Army's round-the-world flight of 1924 and its flight from California to Hawaii in the same year that saw Lindbergh and Byrd each span the Atlantic in a single hop. In such tests as the endurance record of 151 hours set in 1929 by Maj. Carl Spaatz and Capt. Ira C. Eaker, the Air Corps had contributed further to study of the complex problems of design and engineering which were fundamental, among other things, to the quest for greater range. Given the current efficiency of motors and design, range was a matter of size, and by the 1930's, when aeronautical science had reached a stage in its development that brought a truly big plane within practical reach, an issue within the Army which first had been debated in terms of day and night bombardment, and which then had been restated by the Air Corps in terms of heavy and light bombardment, became almost imperceptibly a question of the long-range bomber.

Maj. Gen. Frank M. Andrews, in writing a few years later on "Types of Airplanes Required To Execute Air Force Missions," prefaced his discussion by the following observation:

The tactical and strategical employment of Air Forces and the status of development of aeronautical science exercise a profound mutual influence, each upon the other. The needs of employment spur the designers and manufacturers to produce equipment that can meet those needs, and likewise, the equipment on hand, or definitely foreseen, limits or extends the sphere of influence of Air Power.¹⁷⁵

It is in the light of this fundamental consideration, perhaps, that the origins of the long-range bomber can most profitably be considered here. On an earlier page notice has been taken of doctrinal developments within the Air Corps which by the 1930's emphasized the need for a long-range bomber. That these developments depended partly upon the assurance that such a plane could be built is hardly less certain than that the new doctrine drew continuing support from the techni-

cal progress of commercial aviation and of foreign powers in the development of planes which in themselves forced new considerations upon those men who were charged with our national security.¹⁷⁶ At the same time there can be no question regarding the positive contribution of the Air Corps itself to the development of planes of greater size and longer range.

It is significant that the story of the Army's long-range bomber has its beginning in proposals of 1933 for the construction of an ultra long-range bomber that immediately would have relegated such a plane as the B-17 to the category of medium range. Equally significant is the fact that the proposed plane was intended for a mission of coastal defense and that the proposal was advanced under circumstances decidedly favorable to its acceptance. To understand those circumstances, it is necessary to turn back two years to the MacArthur-Pratt agreement of 1931, which, for the time being at least, promised a permanent settlement of controversial issues between the Army and the Navy over the use of aircraft in coastal defense.

Neither space nor time will permit here an attempt to survey the extended controversy which preceded that agreement. Briefly, the introduction of the airplane as a weapon of war had brought confusion and sharp debate into areas of defensive responsibility theretofore clearly enough defined. Defense of the coast traditionally had been an Army function; it fortified and manned positions of obvious importance to the defense of coastal cities and other areas of special strategic significance, and it was expected to take such additional steps as were required to repel an attempted invasion across the coast line. The Navy, on the other hand, placed a high premium on the mobility of its fleet, and, while necessarily dependent upon shore installations, it avoided commitments for coastal defense that would tend to tie down the fleet. Even the defense of naval shore installations was a primary responsibility of the Army. Because of the limited range of coastal defense weapons and an obligation for the safety of shipping, however, the Navy necessarily assumed certain responsibilities for the protection of coastwise sea lanes. But the Navy's obligations, in contradistinction to the Army's, were limited, and it was readily admitted that final responsibility within the range of land-based weapons lay with the Army. The airplane, of course, effectively extended the range of the Army's land-based weapons, and, in so doing, it gave to that service the means to extend its operations in defense of

the coast over an element heretofore regarded as almost exclusively the Navy's responsibility. At the same time, the airplane offered to the Navy a new weapon of growing potentialities in the performance of such traditionally naval functions as patrol of coastal sea lanes. Placed aboard a carrier, the airplane could be regarded merely as a new element of the fleet, but the land-based plane carried certain advantages in the fulfilment of some missions at sea. In the development of service aviation, consequently, there was a tendency for the Navy to move ashore and for the Army to extend its activities beyond the shore line.¹⁷⁷

In the resultant disputes—which focused from time to time on the right of the Army to engage in seaward reconnaissance, on the right of the Navy to acquire land-based planes, and increasingly on its right to expand shore facilities for land-based planes at the risk of duplicating existing Army facilities—traditional delineations of function and responsibility became blurred. Efforts to secure agreement all too frequently ended in the airing of irreconcilable views, and such was the peculiar perplexity of the problems raised that attempts to secure some authoritative and definitive settlement had proved futile.¹⁷⁸

Readily understandable, therefore, is the very evident satisfaction with which the War Department announced on 9 January 1931 the conclusion of an agreement between Gen. Douglas MacArthur, Chief of Staff, and Adm. William V. Pratt, Chief of Naval Operations, intended to leave the air force of each service "free to develop within well defined limits and each with a separate and distinct mission."¹⁷⁹ In his annual report a few months later General MacArthur defined the agreement in these terms:

Under it the naval air forces will be based on the fleet and move with it as an important element in performing the essential missions of the forces afloat. The Army air forces will be land based and employed as an element of the Army in carrying out its missions of defending the coasts, both in the homeland and in overseas possessions. Through this arrangement the fleet is assured absolute freedom of action with no responsibility for coast defense, while the dividing line thus established enables the air component of each service to proceed with its own planning, training, and procurement activities with little danger of duplicating those of its sister service.¹⁸⁰

Before a congressional committee the following year, General MacArthur expressed the opinion that the question of coastal air defense had been "completely and absolutely settled."¹⁸¹

In that same year the War Plans Division of the General Staff

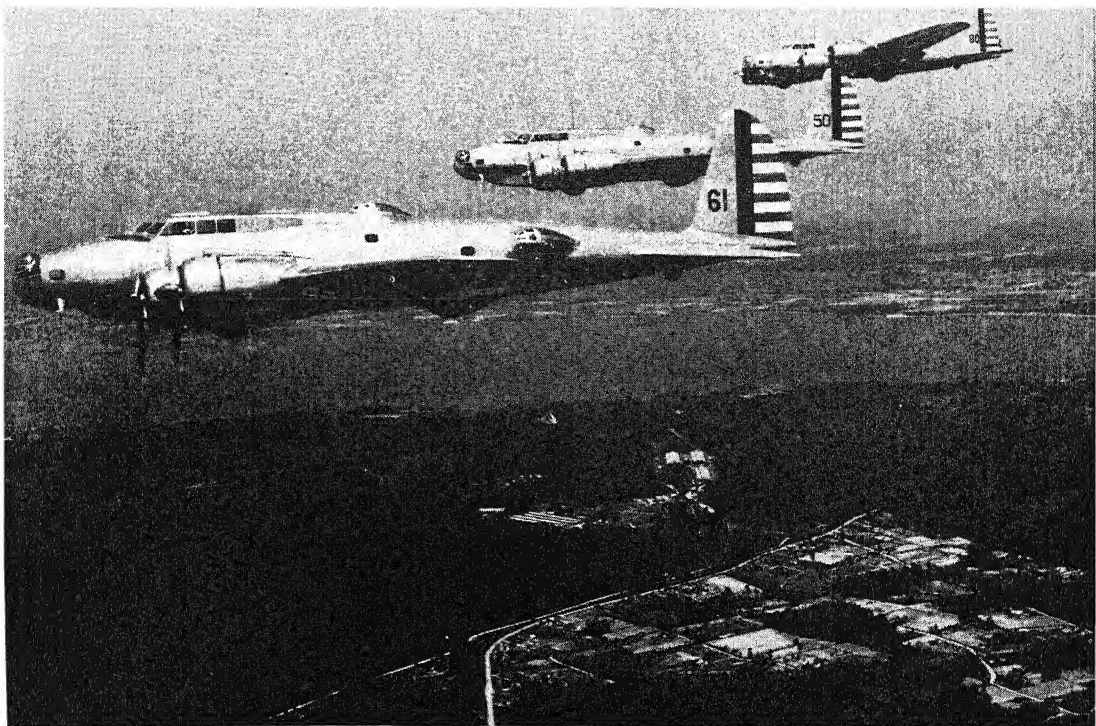
undertook in collaboration with the OCAC an extended study which served as the basis of a letter from the Chief of Staff to the commanding generals of all armies, corps areas, and departments dated 3 January 1933 and entitled "Employment of Army Aviation in Coast Defense."¹⁸² The function of the Army air arm therein stated was "to conduct the land-based air operations in defense of the United States and its overseas possessions." Two distinct classes of aviation concerned with frontier defense were recognized: (1) corps and army observation units normally assigned to ground organizations, mobile forces, and harbor defenses, and (2) "GHQ Aviation, the principal and only component of which, in addition to army reserve aviation, is the Air Force which normally operates initially directly under the Commander of the Army Group." The observation component of the air force, it was declared, should include special equipment suited to long-range reconnaissance over land and water in order that approaches to critical areas might be covered "to the limit of the radius of action of the airplanes." The role of Army aviation in defense against an enemy attack was further described in terms of the following operational phases: (1) reconnaissance and offensive operations between the outermost range of the air force and the line of contact with ground forces; (2) the support of other forces after the enemy came within the range of ground weapons; (3) operations "in connection with the use of all arms on our frontier." During the first phase Army aircraft would attempt to locate, observe, and destroy the enemy vessels and forces. In the second it would lend support by observation undertaken for the assistance of ground forces and by further offensive operations. Should the enemy force the engagement into the last phase, Army aviation would be employed in accordance with general principles governing co-operation with land forces.

With its mission thus broadly and authoritatively defined, the way was now open for the Air Corps to press forward with plans for development of the special equipment required. During the course of the aforementioned study, the Chief of the Air Corps, Maj. Gen. B.D. Foulois, had pointed out to WPD the growing danger of carrier-borne attack on our coasts, the necessity of keeping hostile aviation at least 250 miles at sea, and the importance of developing seaward reconnaissance units for operation under GHQ. It was his feeling that the Air Corps at that time lacked both the equipment and the organization for its newly approved missions.¹⁸³ With this con-

clusion WPD agreed, at least to the extent of informing the Chief of Staff on 14 November 1932 that the Air Corps "should develop a long range reconnaissance plane for use with the observation component of the GHQ Air Force and for overseas garrisons."¹⁸⁴

During the first half of 1933 the focus of attention in the Air Corps was on special command and staff exercises intended to test the value of a GHQ air force under simulated wartime conditions. With authorization from the War Department of 18 January 1933, a GHQ Air Force (Provisional) was organized and placed under the command of Brig. Gen. Oscar Westover, Assistant Chief of the Air Corps. Its mission was to concentrate a substantial part of the Army Air Corps on the West Coast in exercises to be conducted in the late spring for study of the problem of repelling an enemy overseas expedition. Despite rigid financial limitations which forced many compromises with what was considered desirable (the Air Corps had \$19,500 that year for maneuvers), the exercises proved generally very successful. General Westover's report concluded that "all Air Force units could be concentrated on either coast within two and one-half days, and possibly within two days should it be desirable to press the movement"; made constructive recommendations for the organization and command of a GHQ air force as a permanent part of the national defense; and stressed the need for "adequate and suitable equipment and materiel" for overwater reconnaissance. The report drew a distinction between the equipment required for reconnaissance and bombardment and in the former category evidently assumed that improved amphibians would carry the main burden of long-range reconnaissance. It recognized the possibility, however, that provision of "flotation equipment and special characteristics in bombardment aircraft" might "enable them to fulfill their own observation missions in operations over water."¹⁸⁵

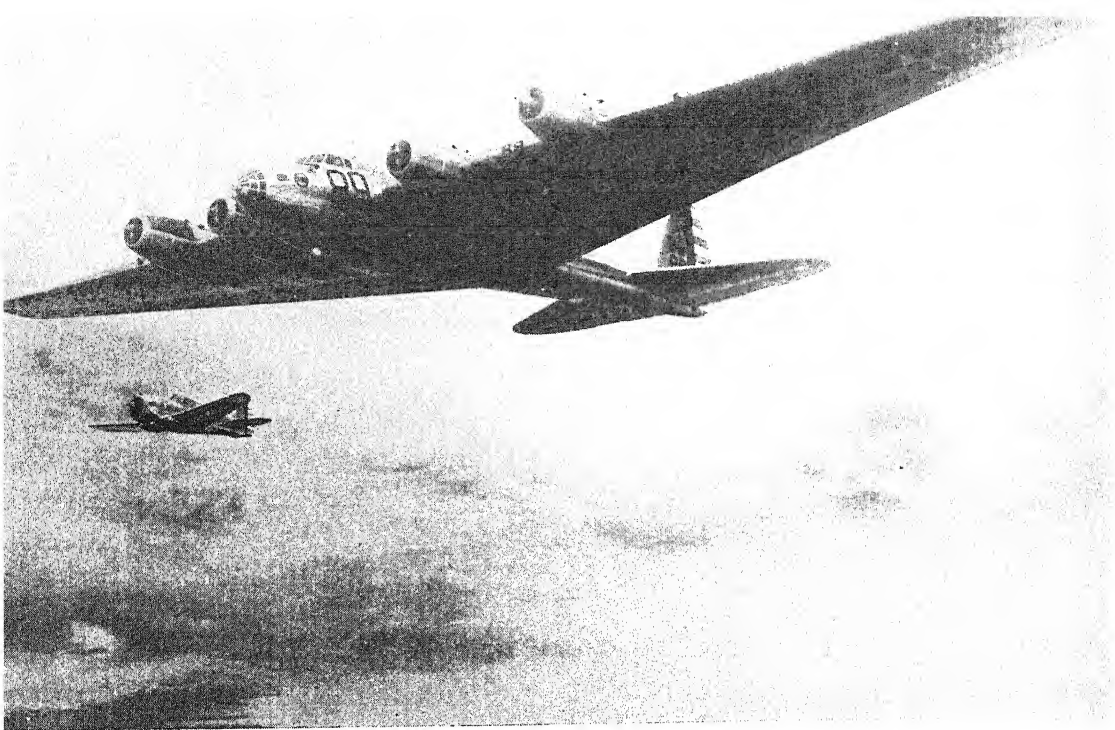
More significant was the inclination to regard reconnaissance and bombardment as the most important functions of a GHQ air force. "The modern trend of thought," wrote General Westover, "is that high speed and otherwise high performing bombardment aircraft, together with observation aviation of superior speed and range and communications characteristics, will suffice for the adequate air defense of this country." The immediate occasion for this observation was a discussion of the disparity in performance between bombardment and pursuit planes which raised in General Westover's mind a



B-17'S IN FORMATION, MAY 1937

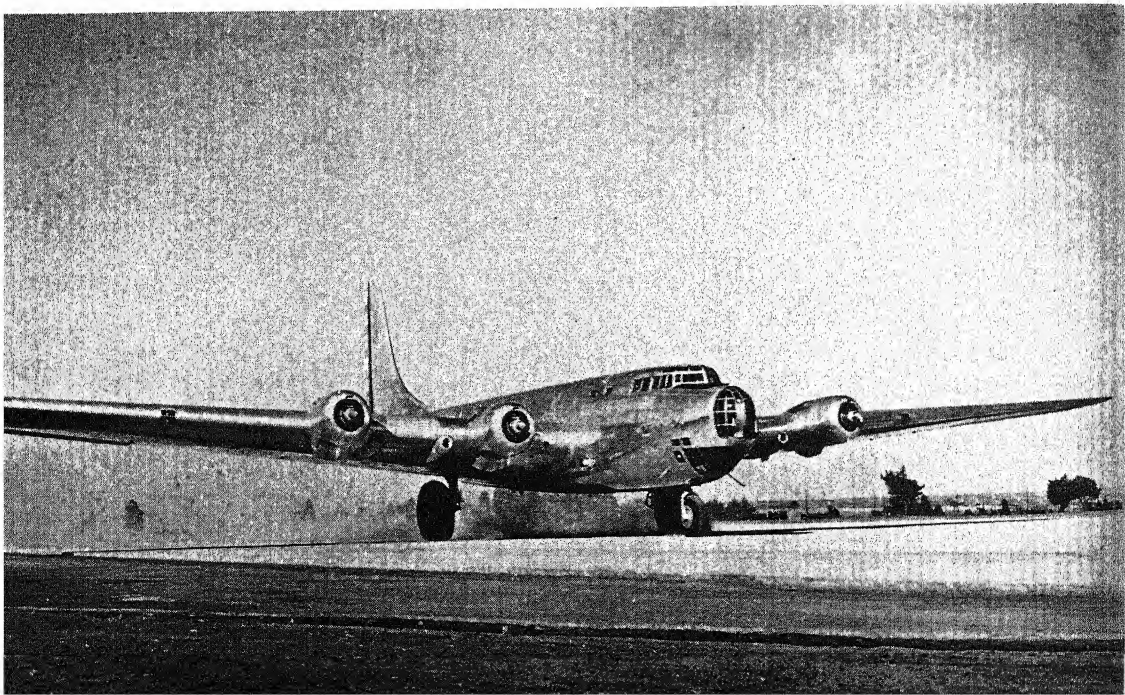
B-17'S OVER NEW YORK,





THE B-15 AND A P-36

THE B-19



serious question that the latter could be expected in the future to perform traditional functions in connection with bombardment missions. As he explained:

During these exercises, observation aviation appeared woefully obsolete in performance, as did pursuit aviation in speed characteristics. Since new bombardment aircraft possesses speed above two hundred miles per hour, any intercepting or supporting aircraft must possess greater speed characteristics if they are to perform their missions. In the case of pursuit aviation, this increase of speed must be so great as to make it doubtful whether pursuit aircraft can be efficiently or safely operated either individually or in mass.

The answer to the problem thus posed was suggested in a statement of first-rate importance to an understanding of ideas which subsequently governed the thinking of the Air Corps. "Bombardment aviation," General Westover observed, "has defensive fire power of such quantity and effectiveness as to warrant the belief that with its modern speeds it may be capable of effectively accomplishing its assigned mission without support." Indeed, the "ability of bombardment aviation to fly in close formation and thus to insure greater defense against air attack, together with improved efficiency of silencers and camouflage," argued that "no known agency can frustrate the accomplishment of a bombardment mission."¹⁸⁶

That the bomber would have the first call in the development of new equipment, and that the trend of thought favored a combination of the reconnaissance and bombardment function in one plane, was suggested by an engineering study, undertaken in July 1933 by the Materiel Division at Wright Field, of the problem of "maximum range" with "a 2,000 pound bomb load." The result of that study indicated that a range of 5,000 miles at a speed of 200 miles per hour was practicable. Accordingly, in December the Air Corps submitted to the War Department in its so-called Project A a proposal to build a plane of that range. In support of the proposal it was pointed out that such a plane would "not alone reinforce either coast line . . . but would definitely enable . . . reinforcement of . . . Panama and Hawaii."¹⁸⁷

The action of the War Department General Staff was prompt enough. Tentative approval having been given on 19 December 1933, a \$609,300 Air Corps budget for long-range bomber development was approved "in principle" on 12 February 1934, and on 12 May the Chief of Staff authorized the negotiation of contracts with the Boeing and Martin companies for preliminary designs and engineering

data.¹⁸⁸ Military characteristics for the new 5,000-mile-range bomber, approved by the General Staff on 16 May 1934, were adjusted to a tactical mission for "the destruction by bombs of distant land or naval targets" and a purpose "to reinforce Hawaii, Panama, and Alaska without the use of intermediate servicing facilities."¹⁸⁹ June 1934 saw completion of the preliminary contracts with the Boeing Aircraft Company, and a year later a contract was closed for the purchase of one XB-15, as the projected plane had now come to be designated.¹⁹⁰ The plane itself was not completed until the fall of 1937, and subsequent tests proved that its size and weight had been conceived on a scale too ambitious for the power plants then available. But Project A became the parent, too, of the B-17, the B-24, and the B-29, to mention only those heavies which carried the weight of the bombing attack on Germany and Japan in World War II.

The B-17 grew out of proposals distributed in 1933 among manufacturers for a design competition in the following year. These proposals specified a multi-engine bomber, and all save one of the competitors apparently assumed that the Air Corps sought only a superior twin-engine plane. Boeing, however, undertook to develop a four-engine bomber of revolutionary design. In July 1935 the XB-17 underwent successfully its first test flight. The following month it flew nonstop at an average speed of 232 miles per hour from the Boeing plant in Seattle to Dayton—a distance of 2,100 miles. Unfortunately, the original model crashed and burned on 30 October 1935, after completion of all detailed engineering inspection and study of performance data, but before a formal evaluation board had met.¹⁹¹ Pending the final action of an evaluation board, the Air Corps had already recommended the purchase of 65 B-17's in place of 185 other aircraft previously authorized for the fiscal year 1936. But destruction of the original model, though investigation cleared the plane of mechanical fault, was followed by a reduction by the War Department of the figure from 65 to 13. In fulfilment of a contract closed on 17 January 1936, the first of the 13 B-17's was delivered in January 1937, and by August of that year the full number had been delivered.¹⁹²

The reader perhaps will have noticed the coincidence of key dates in the origin of the heavy bomber program with other major developments affecting the role of the Air Corps in national defense. The report of the Drum Board, with its recommendation of a GHQ air

force, had come in October 1933, just after the circulation of proposals which led to the B-17 and only a short while before the submission of Project A for approval by the War Department. In July 1934 the Baker Board made its report, and, in keeping with its recommendations, the GHQ Air Force was activated in March 1935—before the drawing of a final contract for the XB-15 and some four months before the XB-17 underwent its initial flight test. There is in this sequence at least the suggestion that Air Corps leaders may well have been influenced to accept a compromise on the aggravated question of organization* because of the hope that they might thus clear the way for a long-range bomber program. Whatever the case, the Air Corps after 1935 was characterized not so much by its concern to change the basic organization of national defense as by a purpose to find in the mission assigned to the GHQ Air Force the basis for an ambitious program of bomber development.† The Army airman thereafter was, above all else, an advocate of the big bomber, and around the potentialities of that type of plane he built his most cherished hopes.

The mission of the GHQ Air Force proved in the event, however, to be a less secure foundation for those hopes than at first had been anticipated. Although General MacArthur in 1932 had referred to his agreement with Admiral Pratt in terms of finality, Pratt's retirement from the Office of Chief of Naval Operations on 30 June 1933 was followed by a reopening of the old controversies regarding coastal defense.¹⁹³ The tendency of both the Drum and the Baker boards to discount the independent role of the air weapon, and especially their refusal to admit the danger of air attack on the United States, further weakened the position of the Air Corps. And when the Joint Board in the fall of 1934 completed its task of drafting "Doctrines for the

* See above, pp. 30-31.

† A draft copy of a speech found among General Andrews' papers and evidently intended for delivery to officers of the newly established GHQ Air Force contains toward the close this paragraph: "Now just a word about the past. Some of us perhaps believed in an independent Air Force. Some thought perhaps that an Air Defense could be best developed as a separate part of the War Department not under the General Staff, and others perhaps had still other plans, but now that the decision has been made, and by the President himself, to develop our air power as an integral part of the Army, it is up to us to get behind that plan and push it loyally to success. Gentlemen, I give it to you as my sincere belief that a separate Air Corps is a dead issue for many years to come. The GHQ Air Force is a part of the Army and it is our interest and duty to keep that fact constantly in mind, for therein for many years at least I believe lies the best chance of developing Air Power and the best interest of National Defense."

Employment of the GHQ Air Force," a document incorporated in its essentials in the revision of Joint Action the following year, the baffling perplexities of pre-1931 policy regarding the role of aircraft in coastal defense had been in large part restored.¹⁹⁴ The GHQ Air Force as the principal element of the Army air component would operate "as an arm of the mobile Army, both in the conduct of air operations over the land in support of land operations and in the conduct of air operations over the sea in direct defense of the coast." When operating along the coast, it would maintain "such reconnaissance as is essential to its combat efficiency." But, in the absence of the fleet, primary responsibility for information of hostile fleet movements rested with "naval district forces supplemented by Army Air Corps units." The three-phase activity of Army aviation against an enemy attack outlined in General MacArthur's instructions of 3 January 1933* was once again described, and in language much the same, but the need for such activity was now recognized, by implication at least, only in the absence of sufficient naval forces to engage the enemy at sea. These and other points which might be mentioned are finely drawn and somewhat legalistic, but just there lay the trouble. Once again there was ample room for debate.†

When the B-17 was delivered in 1937, it was enthusiastically received by the GHQ Air Force as "the best bombardment aircraft in existence, particularly for coastal defense."¹⁹⁵ But under existing circumstances it proved far from easy to win recognition of the need for such a plane in coastal defense, and under existing national policy it was difficult to find any other justification for the long-range bomber than its capacity to contribute to the defense of our own coasts. "Airplanes could be built to fly across the Atlantic with a load of bombs and return, and the B-17 right now could make a one way trip and reinforce allies in Europe," wrote the Commanding General of the GHQ Air Force in November 1937. "With landing fields at Wake and Guam," he continued, "it could fly to the Philippines and Asia. However, our National Policy is defensive, and we do not now con-

* See above, p. 63.

† A section of Joint Action designed to minimize duplication between the services charged the Army with provision of aircraft for use in support of military operations, in direct defense of the coast, in repelling air raids against shore objectives or shipping in harbors, and in support of naval forces. The Navy would provide aircraft for operations from aircraft carriers or other vessels and shore-based planes for observation, scouting, and patrolling over the sea and for the protection of shipping in coastal zones.

sider such possibilities.”¹⁹⁶ And yet, in the very year that saw the beginning of another major European war, the Air Corps was engaged in an attempt to secure relief from a prohibition which limited the flight of its planes seaward to 100 miles beyond the shore.¹⁹⁷ That this limitation apparently had been imposed by a verbal agreement between the Chief of Naval Operations and the Chief of Staff is suggestive of certain complications over the bomber program that had entered into the relations of the Air Corps and the General Staff.

The War Department had given its approval to an experimental interest in the long-range bomber as early as 1934. It had supported the action leading to the development of the B-17, and though the decision to limit the initial procurement to thirteen planes had proved disappointing to the Air Corps, that decision nevertheless had maintained the project on a hopeful experimental basis. Further encouragement came from War Department approval of a contract of 31 October 1935 with the Douglas Aircraft Company for the design of an experimental bomber even larger than the B-15. The contract carried an option for subsequent purchase of a prototype, and under an authorization of 29 September 1936 that option was exercised through a contract for the building of one experimental model.¹⁹⁸ Completed in the spring of 1941 and test-flown for the first time on 27 June 1941, the Douglas XB-19, with a span of 212 feet, a weight of 84,431 pounds, and a range of 5,200 miles, was the Army's largest prewar bomber.¹⁹⁹ Tests proved that there were no fundamental flaws of design or structure, but, as in the case of the B-15, the size and weight of the plane were too great for the power plants. Consequently, the later B-29, though it mounted engines more powerful than those of the XB-19, was designed as a smaller plane. Only one experimental model of the B-19 was built, but that paid more than ample dividends in the lessons applied to future bomber development within the AAF.

The record shows, then, that within the four years following the inauguration of Project A three major experimental projects had been authorized for the purpose of exploring the potentialities of the big plane and the long-range bomber. From the Air Corps point of view the difficulty lay in the subsequent disinclination of the General Staff to authorize the procurement of long-range bombers for equipment of the GHQ Air Force. Though twenty-nine B-17's had been included in the 1938 procurement program and eleven more for 1939, when Germany attacked Poland in September of that year, only fourteen

four-engine bombers (thirteen B-17's and one B-15) had been delivered to bombardment units of the GHQ Air Force.²⁰⁰

Admittedly there was a certain logic in the over-all policy followed, and the principal cause for concern in the Air Corps was the evidence of an inclination to deny the military need of the long-range bomber, once the plane itself had been fully tested and proved. Leaders of the Air Corps, therefore, tended to direct their arguments increasingly to that point and, aided by the march of world events, to build their case on the broadest possible base. General Andrews as commanding general of the GHQ Air Force urged in June 1937 that the War Department limit future procurement of bombardment aircraft to the four-engine type, pointing out that a large number of twin-engine models already were under contract;²⁰¹ and in a lengthy memorandum of 24 January 1938 for the Secretary of War, he outlined plans that would equip the GHQ Air Force with only two types of bombers, heavy and light or attack bombers.²⁰² He undertook to meet the argument that smaller planes were more economical by pointing out the advantages in that particular of the heavy bomber—its “interchangeability of bomb and fuel load” and a consequent “greater flexibility of employment.” “Airplanes that can be flown to theaters of operations, continental, insular possessions, or foreign, in which this country might become engaged,” he added, “and which can be transferred by air from one theater to another, have an obvious national defense advantage with our limited shipping and in our particular geographical situation.”

General Andrews conceded the claims of both the Army and the Navy for aviation to be used in support of “the Infantry and Battleship.” But he expressed the hope that “the requirements for a broader concept of the application of Air Power” might receive greater consideration than had been the case theretofore:

It is a fact which has apparently been recognized by most of the great world powers, that the airplane is an engine of war which has brought into being a new and entirely different mode of warfare—the application of Air Power. It is the only weapon which can engage, with equal facility, land, sea, and other air forces. It is another means operating in another element for the same basic purpose as ground and sea power—the destruction of the enemy's will to fight.

Moreover, air power, like land and sea power, “must be built up around a basic element.” Bombardment aviation “is the basic element of Air Power,” and “the future capabilities of the bombardment air-

plane in radius of action, speed and fire power" were as yet just beginning to be visualized. "The world struggle for strategic air bases and effective air fleets is well under way," he concluded, "and will become intensified with the fast-moving technical development of the airplane. Air Power is as vital a requirement to the military efficiency of a great nation as land power and sea power, and there is no hope for victory in war for a nation in which it is lacking."

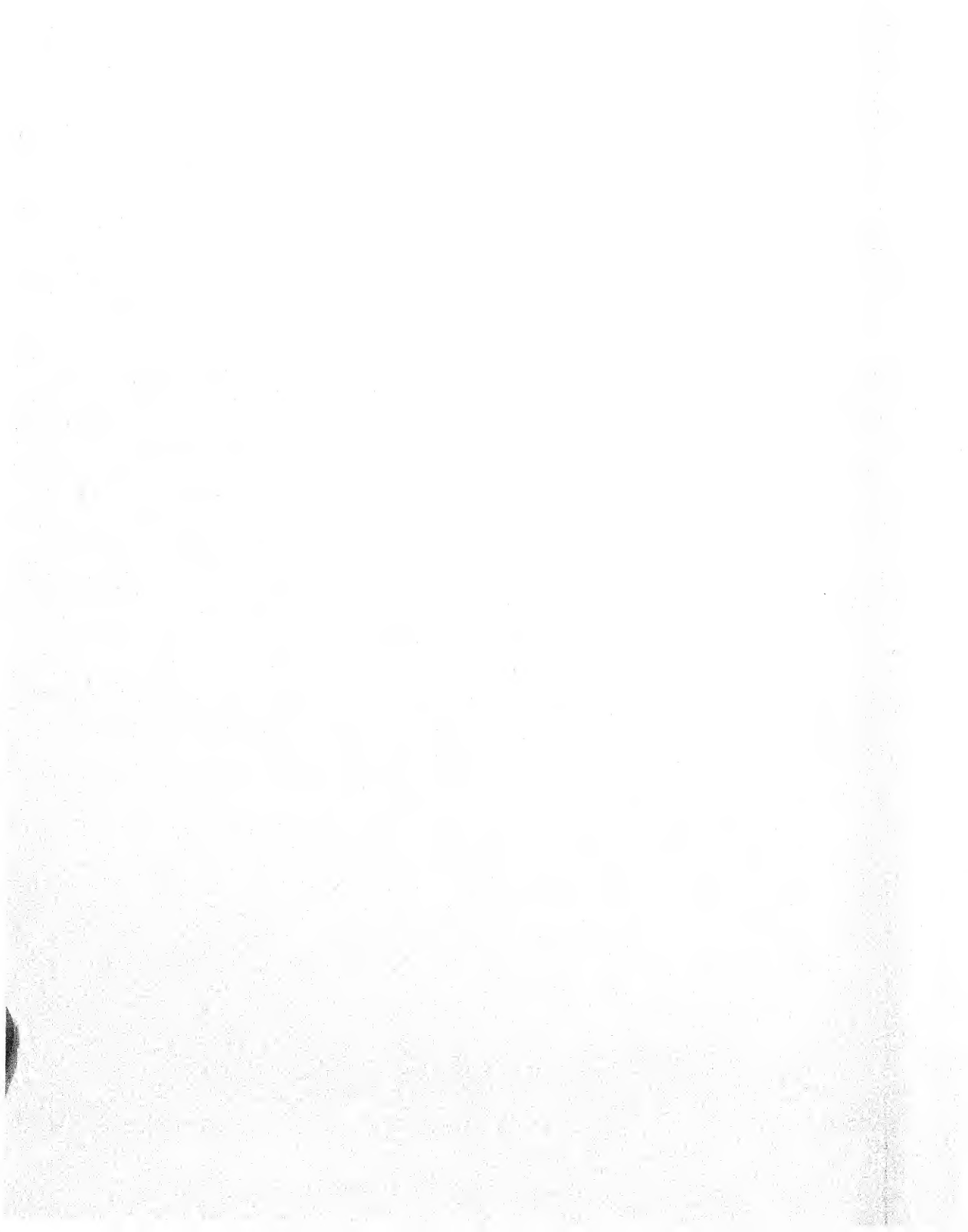
These were the articles of faith on which the Army's airmen stood in the year of Munich, two years before the Battle of Britain. There would appear to be little point in detailing further at this time the continuing controversy with representatives of the War and Navy departments. As noted at the close of the preceding section, the Joint Board in June 1938—five months after General Andrews' appeal to the Secretary of War—officially denied the probability that the Air Corps would in war require planes "of greater practical ferrying range, greater tactical radius, and greater carrying capacity than those of the B-17." Such a policy, if long adhered to, would have deprived the AAF of the B-29. But world developments soon lent additional weight to the arguments for the long-range bomber, and, when the test came, the Army Air Forces not only had a well-defined doctrine of air warfare for its guidance but the plane needed for the job.*

* For a discussion of the development of tactical principles, see below, pp. 597-99.

SECTION II

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PRELUDE TO WAR



CHAPTER 3

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AIR WAR, 1939-41

THE unique capabilities of air power, merely suggested in the small-scale aerial activity of World War I, were effectively demonstrated in the conflict which broke out in 1939, for World War II was characterized from the outset by extensive use of the air weapon. Numerous forecasts of such a development had been voiced since the end of the earlier conflict, both in the aggressor nations and in those nations which became the victims of aggression. In 1919 an American aviation mission, sent to Europe by President Woodrow Wilson to study the future of military aviation, found "that any future war will inevitably open with great aerial activity far in advance of contact either upon land or sea, and that victory cannot but incline to that belligerent able to first achieve and later maintain its supremacy in the air."¹ For a variety of reasons, some of which have been suggested in the preceding chapter, full recognition was not accorded to this finding in the postwar development of our national defense. Only the fact of a second war, world-wide in its implications and holding forth from the first the prospect of our own eventual involvement, created again conditions favorable to a full exploration of the potentialities of the air weapon. Consequently, at least a brief account of the major belligerent air forces and their activities in the period prior to December 1941 must precede any attempt to describe the expanding role of the Air Corps after 1939 in our feverish preparations for war.

From the attention given to the development of air power in Japan, Italy, and Germany, it was clear by 1939 that those nations recognized the airplane to be a redoubtable weapon in achieving their expansionist ends. But the three countries varied in the doctrine, materiel, and

organization which characterized their air arms; different strategic and tactical concepts, reflecting in part differences in geographic position and productive capacity, gave peculiar shape to each of the totalitarian air forces. Similar considerations determined the status of air preparations in Great Britain, France, and other nations opposing the Axis powers. In the military air doctrines developed by major world powers prior to the outbreak of World War II, and in the practical application of those doctrines during the first two years of conflict, lay significant clues as to the eventual victory or defeat of the several nations. Even if the clues were not obvious at the time, it was at least evident that air power would be an important—perhaps decisive—factor in the outcome of the conflict.

The totalitarian nations had tested their air forces in combat during the years immediately prior to 1939, and their action in the localized struggles preceding the world conflict revealed trends and policies which were to characterize their later conduct of the war. In the Far East, Japan's undeclared war against China, prosecuted vigorously after 1937, and Russo-Manchurian border fighting in 1939 gave the Japanese air forces an opportunity to gain valuable combat experience. In Europe, the members of the Rome-Berlin Axis seized upon the Spanish civil war of 1936-39 as a proving ground for their weapons, while the Italian conquest of Ethiopia in the mid-thirties also involved the use of warplanes in tactical experiments. These experiences gave the totalitarian powers an initial advantage over the Allies. The U.S. Army Air Corps made such efforts as were possible to keep informed of developments among its potential enemies and allies and to assimilate the lessons which penetrated the veil of censorship. That veil was particularly effective in concealing the activities and potentialities of the Japanese air forces, and American air officials tended to underestimate those forces.

Japanese Air Power

The Japanese air forces, divided into separate army and navy air arms, had developed under the influence of foreign aviation. In 1911 two Japanese army officers received air training in France, and they were followed by a few more officers during the next two years. In 1919 a French mission comprising some sixty airmen arrived in Japan to assist in army air training; in the same year the army established an aviation section. By 1920 the first military aviation school had been

opened near Tokyo; two additional schools were established in 1922. Organizational changes came with the expansion of the Japanese Army Air Force, which soon occupied a place along with the infantry, field artillery, and cavalry. Before the end of the 1930's the post of Inspector General of Military Aviation had been created, making one commander directly responsible to the Emperor for the training of the air force.²

The Japanese Navy Air Force had a similar history in its origin, development, and gradual assumption of importance. Naval officers who had received aviation instruction in France and in the United States established a training school at Oppama near Yokosuka in 1912. The first Japanese aircraft carrier was completed in 1920, but little progress in training and organization was made until 1921 when a British mission of retired RAF officers and others arrived in Japan to assist in reorganizing the naval air arm. Later British missions instructed the Japanese force in aircraft inspection, tactics, gunnery, and armament. Though the London Naval Treaty of 1930 placed restrictions on Japanese naval construction, the Japanese continued to expand their naval air force, and four "replenishment plans" were approved during the thirties. Night carrier training was begun in 1933, and both carrier and shore-based strength of the naval air force continued to grow.

The functions of the two Japanese air forces were clearly divided. The army air force was designed solely to support the army ground forces, while the naval air force, in addition to supporting the fleet, was responsible for coastal defense, convoy protection, and sea and antisubmarine patrols. There was apparently little co-operation between the two forces, for they had developed independently and they were under the direction of respective army and navy commanders who showed little desire to co-ordinate the activities of the air arms. Despite the foreign influence which had aided in the establishment of the air forces, the Japanese concept of air power and of the role of the separate air arms did not constitute an exact copy of any foreign nation. In organization and theory, as well as in the design and manufacture of aircraft, Japan adapted Western ideas to her own needs, and the resulting mixture of Oriental and Western strains while bearing resemblances to the air forces of other nations did not duplicate any one of them.³

In the period 1937-41 Japanese air power received its first extended

test in combat. In 1931 the Japanese army had moved into Manchuria, and from that stronghold drove into China in the summer of 1937. The air forces of the aggressor had virtually an open sky, for the weak Chinese Air Force was unable to offer strong opposition. Under the stimulus of civil war, from 1911 to 1928, the several factions in China had developed air services consisting of a few obsolete aircraft purchased from abroad. Upon establishment of the central government in 1928, a more stable program was possible, and during the thirties an expansion and improvement of Chinese military aviation was accomplished with the aid of foreign technical advisers. But the Chinese Air Force was in no sense prepared to meet the relatively modern air force with which the Japanese opened the war in 1937. By the end of the year the Chinese Air Force had been almost completely destroyed. Assistance from the Soviet Union and other nations enabled the Chinese to continue their air opposition, but their efforts were ineffectual. Lack of a modern training program, inadequate maintenance and repair facilities, and deficiencies in organization accounted for much of the weakness of the Chinese force.⁴

At the outbreak of the conflict in 1937 air combat on both sides was poorly executed, although there was no question as to the courage of either Chinese or Japanese pilots. Bombing was inaccurate, but the Japanese improved with practice and they revealed a talent for modifying their tactics in order to meet changing tactics of their opponents. The Chinese, forced to fight a defensive war on their own territory, concentrated on improving their interceptor aviation. In the early days of the fighting, Japanese bombers without pursuit protection made daylight attacks on Nanking and other cities, but following a few disastrous encounters with Chinese pursuit planes the bombing was halted until pursuit planes could be brought from Japan to provide the necessary protection. Japanese bombing formations, which at first numbered about nine planes, soon increased to an average of twenty-seven planes per wave of bombers. The attacks, against both Chinese troop concentrations and Chinese cities, were usually preceded by one or two reconnaissance planes which gathered weather information and intelligence of enemy air dispositions. Carrier- and shore-based planes of the naval air force operated against the Chinese, particularly in attacks on Chungking and in support of ground troops in the Shanghai and Tsingtao areas. The air force of the Japanese army participated

on a larger scale, and personnel were rotated frequently in order to give combat experience to more airmen.⁵

In the Russo-Manchurian border fighting which broke out in May 1939, the Japanese Army Air Force received a much more severe and devastating test of its strength. The Soviet Air Force, designed primarily as an immediate support to the Red army, administered a resounding defeat to the Japanese force, which committed almost its entire strength to the engagement and lost approximately 500 planes and 150 pilots. According to the Japanese, their losses were worth while because they brought about important changes in organization, training, and tactics. These changes, however, were accompanied by no marked departure from existing concepts of air warfare, and the chief development came in an accelerated rate of expansion.⁶

As the border fighting ended in September 1939, the poor record of the Japanese Army Air Force led foreign observers to conclude that the army's force was inferior in both training and efficiency to the naval air force. There was some justification for such a belief. Training in the army flying schools was devoted almost exclusively to pilots, and training of other air crewmen was largely neglected until their assignment to tactical units. The navy, on the other hand, gave closer attention to the training of all members of the crew, and by 1941 its training program was designed to turn out annually some 2,500 navigators, bombardiers, gunners, and flight engineers. At the same time, the navy was training about 2,000 pilots a year, while the army was turning out pilots at the rate of approximately 750 a year. In equipment, too, the army air force lagged behind the navy air force. The latter possessed some excellent four-engine patrol bombers, while the army had nothing heavier than a two-engine bomber. Prior to 7 December 1941 the army air force flew almost exclusively over land, and its longest-range bombers had an operational radius of only some 500 miles. The navy's force had been trained to operate over water with a radius of about 800 miles. Both forces, however, had a number of well-tried torpedo bombers, dive bombers, and level bombers, reconnaissance and transport planes, and several models of the Zero fighter—a fast, highly maneuverable but somewhat vulnerable plane with a maximum speed of approximately 350 miles per hour.* The

* The Japanese made no use of the manufacturer's name in the designation of their aircraft, possibly because two or more manufacturers not uncommonly produced the same type plane. Their type numbers instead corresponded to the last one or two

planes were hybrids of foreign designs, with German influence being particularly noticeable after 1936 when Japan threw in her lot with Germany by signing the Anti-Comintern Pact.⁷

By 7 December 1941 Japanese air strength consisted of some 2,700 aircraft assigned to fully trained air units. Approximately 6,000 pilots had been graduated from air schools or training units, 3,500 of which were assigned to the navy and the remainder to the army. About 50 per cent of the army pilots had been in combat either in China or in the border fighting against the Soviet Air Force, while 10 per cent of land-based navy pilots had participated in the Chinese operations. Some 600 of the best navy pilots were assigned to aircraft carrier units. In contrast to the 200 hours in primary, basic, and advanced training then being given to Air Corps cadets in the United States, the Japanese pilots were receiving about 300 hours in training units before being assigned to tactical units. The average first-line Japanese pilot in 1941 had about 600 flying hours, and the average pilot in the carrier groups which were destined to begin hostilities against the United States had over 800 hours. Though somewhat discounted by officials of other nations, the Japanese air forces had now reached a peak of efficiency, at any rate in their first-line strength, which gave them a commanding position in the Pacific.

There were, however, certain fundamental weaknesses. In their approach to the problems of air warfare, the Japanese took a limited view of its possibilities. To the ground force officers who commanded

digits of the year of issue according to the Japanese calendar, by which the year 1940 was the Japanese year 2600. Thus the planes brought into use during 1939 were designated as type 99 and those issued in 1940 were type O. At first only one type O aircraft—the Mitsubishi type O single-engine fighter used by both the Japanese army and navy—was widely known to American pilots and called the Zero. When, in the fall of 1942, the Americans began to meet other type O aircraft, however, they gave up identification by serial numbers in favor of short, easily pronounced code names. By this nomenclature the more important of Japan's tactical aircraft came to be known as follows: the Mitsubishi type O single-engine fighter (made also by Nakajima) became the Zeke, its float-plane counterpart the Rufe, the Nakajima type 97 single-engine army and navy fighter the Nate, and the Nakajima type 1 single-engine fighter the Oscar; the type 97 bomber made by both Nakajima and Mitsubishi became the Kate, the type 99 Aichi dive bomber was called the Val, and the Mitsubishi twin-engine medium bombers types 96, 97, and 1 were named the Nell, Sally, and Betty; the types 97 and 98 Mitsubishi light bombers became the Babs and Sonia; the two principal four-engine flying boats in use during 1942, the types 97 and 2 Kawanishi, were designated as the Mavis and Emily; and the type D-2 transport (the Douglas DC-2 adaptation) was named the Tess, while the Mitsubishi type O transport became known as the Topsy.

army air units, the airplane was chiefly a tactical weapon for supporting ground troops at short range. While the navy's concept was broader, it did not encompass the necessity or desirability of long-range, sustained air attacks on rear areas. There was nothing to indicate that the Japanese comprehended the logistical possibilities of transport aircraft, either for troop-carrier or for supply-dropping purposes. The lack of co-operation between the army and navy forces did not augur well for a war which might demand joint operations. Furthermore, the division of the forces extended into the production realm, where the army and navy competed for production facilities and raw materials and failed to provide for the exchange of information so vital to the efficiency of the Japanese aircraft industry.

Actually, the Japanese possessed neither the economic potential nor the extensive technical skill necessary for developing and maintaining a first-class air force. If other nations erred in underestimating the strength of Japanese air power in 1941, the Japanese high command for its part failed to appreciate the disparity between Japan's air potential and that of prospective opponents. In 1941, for example, the aircraft industry in Japan turned out only 5,088 planes, while the United States, though only in the initial stages of its conversion to a wartime economy, produced 19,445. In comparison with the 11,000 pilots trained by the U.S. Army and Navy during 1941, the Japanese training programs turned out about 3,000. The Japanese also seemed to have had little appreciation of the problem of replacements, for they sacrificed safety factors in aircraft to performance, and they made relatively little provision for air-sea rescue of highly trained personnel. In the matter of airfield construction and maintenance of aircraft, the Japanese had only rudimentary conceptions of the problems involved; no system had been developed for the rapid construction of airfields, while only small supplies of spare parts were kept on hand and the number of depots for major repairs was inadequate for extensive operations.⁸

The Japanese air forces were not prepared for a war of long duration. Their major dependence would be placed on the element of surprise and on a few well-trained airmen in the execution of skillfully laid plans. Confident of an early victory, they discounted the potential strength of their enemies.

The Italian Air Force

In the theory of aerial warfare and in the organization of their air forces the Italians were much further advanced than the Japanese. Following World War I, Italian aviation had sunk to a low level of efficiency and strength. By 1922 their first-line aircraft, approximately 100 in number, were becoming obsolete. But when Mussolini came to power in that year, he instituted a series of changes designed to build a powerful air arm. Making the air force independent of the army and the navy, Mussolini established a separate air ministry with himself as Air Minister.⁹ The new office, which had control over the placing of all orders for aircraft in Italy, encouraged the development of new models and began to place into production the two most promising designs offered in any one competition. By 1939 some twenty-nine firms in Italy were producing aircraft, while six firms were manufacturing aircraft engines.¹⁰ By this time the Air Ministry had steered the Regia Aeronautica (Italian Air Force) through a number of reorganizations to meet the expanding demands of Italy's aggressive policy. When the country became an active participant in World War II, the Regia Aeronautica was organized into four parts: an independent air force, army co-operation units, a naval air service, and a colonial air force.¹¹

For their air doctrines, the Italians depended almost entirely on the thinking of their noted Gen. Giulio Douhet. It was Douhet's belief that the airplane had revolutionized the nature of war. As opposed to land and sea operations, in which the defensive attitude was easier than the offensive, aerial operations were carried out in a medium which facilitated offensive action. No longer would warfare be confined to armies on the field of battle or to vessels on the high seas; according to Douhet, the total population now became the belligerents, and victory could result only from the total application of a nation's material and moral resources and the exhaustion of those resources of the enemy. He emphasized the necessity for swift and decisive destruction from the air, the rapidity of the successive attacks not allowing for material repairs or recovery of morale. This doctrine reflected Italy's economic weakness and a vulnerable geographic position; for while her position in the Mediterranean was potentially dominating, it was also dangerously exposed, and her economic resources were decidedly limited. Italy's best chance of success in warfare therefore seemed to lie in a

short, swift war, the victory to be achieved largely through the paralyzing effect of strategic bombardment.¹² In the matter of organization, Douhet advocated the establishment of the air forces as a separate arm and the co-ordination of air, army, and navy forces through a department of national defense. This last part of the Douhet doctrine was closely followed by the Italians, for after the establishment of the Air Ministry all Italian forces were reorganized and Marshal Pietro Badoglio became chief of staff of the United Armed Forces.¹³ But, when the test came, the Regia Aeronautica proved itself incapable of carrying out either a short or a long war against any reasonably determined opposition.

In its first "combat" test during the thirties the Italian Air Force faced no real opposition. In the war against Ethiopia, 1935-36, Italian bombers gained experience in the use of various types of projectiles, and experiments were conducted in dropping ammunition, food, and water to the Italian ground forces; even fresh meat was supplied for the troops by the dropping of live goats and sheep which parachuted to the desert and took up the march with the army until they were needed for food. Most of the planes used were obsolete, though the few Savoia-Marchetti bombers employed were of latest models. But in a country as primitive as Ethiopia there could be no chance to test Douhet's theory of strategic bombardment; the air force was employed almost exclusively in giving close support to Italian ground forces.¹⁴

A more thorough test of Italian air materiel and doctrine was provided by participation, beginning in 1936, in the Spanish civil war. Again the opposition was slight. Russia, as well as Germany and Italy, took an active part in the contest, but Soviet assistance to the Loyalists was limited, and the few obsolete aircraft which the Republicans acquired from France were quickly shot down or wrecked. The bombing by both factions in the conflict was largely tactical, although the Italians claimed to have accomplished a considerable amount of effective strategic bombing. Italian air units, based on the Balearic Islands, Sardinia, and the mainland of Italy, at times operated as an independent force against cities and harbors; and the bombing, performed at heights ranging from 16,000 to 20,000 feet, was reported by the Italians to be "remarkably accurate." According to Gen. Giuseppe Valle, addressing the Chamber of Fasci and Corporations on 5 May 1939, the war in Spain had demonstrated "the importance of the air arm in independent strategic action." He pointed to the case of Bar-

celona, where port facilities capable of handling as much traffic in one day as all the other Catalonian ports in ten days had been paralyzed, according to him, in a systematic offensive carried out by thirty bombers over a period of several months. But when all is said, there would appear to be more reason for regarding the Nationalist victory as an indication of the weakness of Loyalist forces than as proof of the tactical and technical soundness of the Italian Air Force.¹⁵

The U.S. Army Air Corps, at least, saw nothing in the aerial warfare in Spain or in China to suggest the advisability of change in its own doctrines. In both conflicts the combatants employed relatively small numbers of aircraft, and the bomber appeared to be regarded chiefly as a means of intensifying artillery fire and of increasing its range. In the few instances of strategic bombing, the number of planes employed was so small as to preclude the possibility of really significant results. As for the matter of individual technique, little emerged from the fighting in Spain or in China that was not already known as a result of the aerial activity of World War I.¹⁶ The Italian Air Force, closely watched by air strategists in the United States and elsewhere, again had failed either to prove or to disprove the doctrines of Douhet.

When Italy entered World War II in June 1940, just a few days prior to the collapse of France, Mussolini hoped that the Regia Aeronautica with its approximately 2,600 first-line aircraft would prove a dominating factor in control of the Mediterranean. The hope was not fulfilled, for numerous weaknesses in the Italian Air Force rapidly came to light, and the force began its descent from the fairly respectable reputation which it had held among the air forces of the leading world powers. Italy's aircraft industry was unequal to the demands of large-scale warfare; production of combat types never exceeded 300 aircraft a month. The pattern of air force organization proved to be unstable and unwieldy in widespread operations. Training and morale were on a low level, and the temperament of the Italian airman tended to stress individual exploits rather than accomplishments of the group. Much of the equipment of the air force was obsolescent, while poor maintenance kept many of the planes on the ground. A great portion of the strength of the Regia Aeronautica was committed to the fighting in Africa, where the Italians attempted in vain to rout the British from their positions in the northern part of the continent. Initial Italian successes in the campaign were soon followed by the disintegration of Italian East Africa, and in the first retreat in Libya the Italians lost

approximately 1,200 aircraft. The Italian Air Force clearly had not been prepared for the defensive war which it was forced to fight. Although the efficiency of the force thereafter increased slightly under the stimulus of its working partner, the German Air Force, the Regia Aeronautica never exhibited sufficient power to be decisive in the outcome of prolonged hostilities. The fundamental weakness of the Italian Air Force was not in its theory of air power, which later events proved to be essentially sound, but rather in its inability to make proper application of that theory.¹⁷

The German Air Force

Germany possessed by far the most formidable air force of the three totalitarian nations. Following World War I, German aviation had been virtually abolished by the Treaty of Versailles. Determined to rebuild their military aviation, however, the Germans found ways of circumventing and then openly violating the terms of the Versailles agreement.¹⁸ Since the treaty had not prohibited German manufacture of commercial aircraft except for a brief period of six months, the German aircraft industry soon began to revive. In 1922 and again in 1924 limitations were placed on the number of civil aircraft which the Germans might manufacture, and representatives of the allied nations also laid down more specific rules defining the term "military aircraft" as used in the Treaty of Versailles. These restrictions had little effect, for German aircraft manufacturers promptly established subsidiary companies in neutral countries, where the production of aircraft could proceed without regard to limitations. Factories were built by Junkers in Russia, Sweden, and Turkey, by Rohrbach in Denmark, by Heinkel in Sweden, and by Dornier in Italy and Switzerland. The lid was officially removed in May 1926, when the Paris Air Agreement withdrew all limitations on the number and size of commercial aircraft which Germany might build, though the bans on military aviation and on the subsidization of sporting aviation remained.¹⁹

It was therefore under the guise of commercial aviation that the German Air Force began its recovery. The German Republic established a ministry of transport with an aviation department which had authority over all civilian aeronautics. Headed by a former officer of the German Air Force, the aviation department sought to promote the growth of "civilian" airlines, the advancement of aeronautical science, and the development of interest in aviation among the German people.

An air sport association encouraged the formation of flying clubs throughout Germany, which gave flying and gliding training to thousands of members. In addition, pilot training schools were set up, ostensibly for airline pilots; but at the end of the usual three years' schooling, which was conducted in a strictly military manner, the pilots were actually qualified to operate bombers. Many former pilots of the German Air Force assumed controlling positions in the civilian airlines, while other pilots went to foreign areas, South America in particular, where they established commercial aviation companies.

In 1926 all German airlines, with the exception of one operating to Russia, were consolidated into the Deutsche Lufthansa, a heavily subsidized company which soon was extending its lines throughout Europe. The aircraft manufactured in Germany were still "civilian" aircraft, but they had been designed with a view to conversion for military purposes. Even at the time of its initial organization, the Lufthansa could have furnished the Reichswehr with at least two fighter squadrons, one bombardment squadron, and one auxiliary squadron of bombers. The extension of the Lufthansa into other countries was accompanied by the establishment of German training centers outside Germany proper and by the assignment of officers to a number of foreign air forces for observation and training. By 1931 the German Air Force, officially nonexistent, was composed of four fighter, three heavy bomber, and eight reconnaissance-bomber squadrons, not including German units in Russia. As an indication of the rate at which airmen were being trained, in 1932 the air sport association (Deutscher Luftsportverband) alone trained 1,500 pilots and had under training 3,000 power pilots and 15,000 glider pilots.²⁰

The military complexion of the clandestine Luftwaffe became much more obvious after Hitler's assumption of power on 30 January 1933. Within three days the new chancellor placed Hermann Goering in charge of all civil aviation and air raid protection, which previously had been under the Ministry of Transport. Members of all flying clubs of the air sport association were immediately put into uniform, and a large-scale flying training program was inaugurated among the members. Students in training under the Lufthansa were also placed in uniform, and "commercial" schools were expanded considerably. An extensive construction program of modern airdromes was begun in secret. The aircraft industry was greatly enlarged, not only by the expansion of existing plants, but also by the conversion of many com-

panies engaged in automotive, locomotive, and steel construction. And in May 1933 the German Air Ministry was established, Goering assuming the office of Air Minister.²¹

With the boldness and audacity which characterized the Nazi regime from the outset, Germany soon threw off all pretense concerning her rearmament, and it became evident that the German Air Force would have an important role in accomplishing Hitler's plan of territorial aggrandizement. In March 1935 the Germans officially announced the formation of the Luftwaffe. Goering, who continued to head the Air Ministry, was made commander in chief of the Luftwaffe with Erhard Milch as his administrative deputy. The "new" air force was then composed of approximately 1,000 aircraft and some 20,000 officers and men. Its reserve supply of airmen was of course very considerable as a result of the training programs of previous years.

The decree of 1935, which officially brought the Luftwaffe into existence, stipulated that it was to be a third element of the Wehrmacht, independent of the army and the navy. The air force with its commander, Goering, thus came under the jurisdiction of Gen. Werner von Blomberg, Minister of Defense and head of the Wehrmacht. Goering, then reputed to be the second most powerful man in the Nazi regime, did not enjoy taking orders from von Blomberg, and the relations between the two men were far from harmonious. Personal differences, moreover, were reinforced by differing concepts of the place and role of the air force. Goering wished to make his Luftwaffe a completely independent organization, in control of its own supplies, recruiting, communications, and finances. He wanted to control all activities which were even remotely related to air, and with such power he hoped to direct the aircraft industry and the allocation of personnel to the advantage of the air force. The dominant influence within the Wehrmacht, however, naturally tended to be that of the old-line general staff of the German army, which strongly opposed the idea of an absolutely independent air force. Neither the prospect of competition with it for manpower and materiel nor the idea of complete dependence upon Luftwaffe commanders for air-ground co-operation appealed to the army chiefs. Furthermore, the army remained for a time less an instrument of the Nazi party than was the Luftwaffe, and this fact was reported to be reflected to some extent in the attitude taken on issues raised by the air force.

Leaders of the Luftwaffe advocated a powerful strategic air force in

keeping with the theories of Douhet, but official policy regarded the airplane primarily as a tactical weapon for use in support of ground forces. The doctrinal position of army chiefs did not overlook the possible aid to be provided by independent strategic operations, but such efforts definitely came second to air support for the ground forces; and, at a time when plans were being drafted for a quick conquest and exploitation of neighboring countries, there naturally existed a disposition to frown upon proposals for destruction by strategic bombardment of targets which otherwise might be promptly converted into German assets. Indeed, some question remains as to how far the German airmen themselves explored in their thinking the problems and potentialities of strategic bombardment. In any case, their job was first to act as an advance striking force, then to operate in direct support of an invading army. For that job they were well equipped, trained, and organized. Though the Luftwaffe hardly proved to be so overwhelming a force as its advance notices indicated, it was without question a tough and skillful enemy.²²

Following a series of retirements, including that of von Blomberg, Hitler in February 1938 assumed direct command of all the German armed forces. Under this arrangement the Luftwaffe, along with the army and navy, had direct access to the Fuehrer, while the Defense Ministry and the German Supreme Military Staff became Hitler's advisers. But this change brought no essential alteration in the air force mission.²³ Operationally and administratively the Luftwaffe had been organized on a geographical basis, and in February 1938 four air fleets were established, each composed of a number of air divisions. Each of these air divisions constituted a balanced force of bomber, fighter, and reconnaissance units and could be shifted from one fleet to another as the occasion required. In administration, supply, and maintenance, the provisions reflected an emphasis on operational mobility.²⁴ German aircraft were generally satisfactory and some possessed outstanding qualities, but they were mainly fighters, transport planes, and bombers suited to the requirements of close support for ground armies.²⁵ In the fighter class the Messerschmitt 109 was the main reliance, though a few squadrons had been equipped with the longer-ranged and speedier twin-engine Me-110. There were no four-engine bombers comparable to the American B-17 or the British Stirling; German bombers were two-engine mediums, chiefly the Heinkel 111 and the Dornier 17, and to these was added the Junkers 87, the

highly publicized dive bomber or Stuka. Goering had successfully opposed the navy's desire for its own separate air arm, and the Luftwaffe held responsibility for coastal patrol, overwater reconnaissance, and other activities in conjunction with naval forces.

In the same month that Hitler issued decrees effecting the reorganization of the Luftwaffe, he asserted that the Reich would expand to include ten million Germans beyond her borders. Within one month Austria had become the first victim of Nazi aggression. During their occupation of Austria the Germans used approximately 400 aircraft, more than one-fourth of the number being transport aircraft which brought 2,000 soldiers to Vienna. The Luftwaffe soon absorbed the small Austrian Air Force and was again employed by Hitler in September 1938 when some 500 German aircraft assisted in the invasion of the Sudetenland. A year later the might of the Luftwaffe was released in open warfare. By that time, September 1939, the German Air Force was equipped with approximately 4,000 first-line aircraft, of which some 1,800 were bombers and 1,200 were fighters. Behind it stood an aircraft industry then capable of producing approximately 1,100 aircraft a month, but actually producing each month about 500 aircraft of all combat types.²⁶ Clearly, it was not anticipated that the venture now about to be launched would involve too heavy a commitment. In its internal organization the Luftwaffe seemed to have achieved most of its objectives, and it was ready to prove its worth as a co-ordinate member of the Wehrmacht.

On 1 September 1939 the Luftwaffe and German army forces inaugurated a lightning-like campaign which saw the virtual annihilation of the Polish army within twenty days. The German Air Force, which had 1,000 bombers and 1,050 fighters in operational condition, met no effective opposition from the Polish Air Force, which consisted of less than 500 planes of all types, most of them obsolescent. The Luftwaffe was used both to eliminate the air opposition and as an advance striking force for the army. So successful was the Polish campaign that the Germans saw no need for major change. Army commanders felt that the results justified their conception of the air force as a tactical weapon to be used primarily in support of the ground forces, while Luftwaffe chiefs took satisfaction in the performance of their fighters and dive bombers. There was no demand for the creation of new types of aircraft or for an increase in aircraft production.²⁷

In the Scandinavian and western campaigns which followed during the first half of 1940, the Luftwaffe continued to perform with skill and success its established missions. The German invasion of Norway was swiftly executed in April 1940 with an excellent demonstration of airborne operations and of the potentialities of air power in controlling limited sea lanes. The Luftwaffe employed some 800 tactical planes in the brief campaign, while an additional 250 to 300 transport aircraft operated between Germany, Denmark, and Norway to establish air bases in a record time at strategic points in Norway. Reconnaissance and sea rescue work also figured in Luftwaffe operations. The badly outnumbered Norwegian air forces could offer only slight resistance.

The western campaign, which began on 10 May 1940, saw the continued success of the German forces as they sped across the Low Countries and France. Two air fleets of the Luftwaffe, comprising some 3,000 planes, were more than sufficient to wipe out the weak air opposition of the invaded countries and to provide support for German army forces. For the first time, German parachute troops were successfully employed when the Nazi forces invaded Holland. The Netherlands army ceased formal resistance within four days. Leading the rapidly advancing Panzer divisions through the Low Countries, the Stukas bombed troop concentrations and installations of the defending forces, while German transport aircraft evacuated many of the wounded and carried supplies to air force units which quickly moved into bases in southern Belgium and northern France. Most of the German air effort during May was directed toward close support of the army forces as they raced toward the Channel ports. At Dunkirk the Luftwaffe momentarily yielded supremacy to the RAF, which was able to gain the local air superiority necessary to allow most of the battered British Expeditionary Force to be evacuated from the port. The Luftwaffe then turned to completion of the drive against France, which proved to be a not very difficult task.²⁸

The French Air Force, in particular, was ill prepared for the German onslaught.²⁹ It had failed to fulfil the promise which it exhibited during the years immediately after World War I, when France had spent large sums on her air force and had been a leader in the field of aviation. A separate air ministry was established in 1928, but lack of continuity in leadership resulted from frequent changes in the French cabinet. With nine changes in the position of air minister

within ten years, and with frequent changes in the chief of staff, French aviation had little opportunity to develop in accordance with a definite, long-range program.

Until mid-1934 French army aviation, which like the German was used chiefly for army co-operation, was under the jurisdiction of the War Ministry, while naval aviation was controlled by the Ministry of Marine. In July 1934, the Armée de l'Air (French Air Force) was established by government decree as "an independent army capable of participating, on the one hand, in aerial operations and in the air defense of territory and, on the other hand, in combined operations with the land and sea forces." In keeping with French military traditions, however, the air force remained closely attached to the army. The reorganization of 1934 did not affect commercial or naval aviation. Two years later another reorganization assured the French Air Force of autonomy, if not complete independence. In order that command of air units might be separated from command of territorial units, a decree of September 1936 established a unified command for all air units other than naval. The aircraft industry was nationalized at about this time, and a subsequent slump in production saw the output of military airplanes reduced within less than two years to the negligible rate of ten planes per month. By this time the combat efficiency, organization, morale, and equipment of the French Air Force had dropped to an unprecedented low.

Hurried attempts to rebuild the French Air Force were made after the Munich conference in 1938. Both local production and foreign purchases of aircraft were increased, but the revival came too late. France entered World War II with an air force which was deficient in every respect. Besides the low level of morale which characterized all the French forces, the air force did not have a sufficient number of bombers for offensive action, and it lacked sufficient fighter strength for defense against the Germans. Ground troops did not have adequate air support, while the lack of liaison and reconnaissance aircraft constituted a further deficiency. If any thought had been given to the use of the French Air Force as a strategic weapon, it had failed to materialize. The weaknesses of the French Air Force contributed substantially to the success of the Luftwaffe in the spring of 1940. After French surrender on 22 June, only the RAF remained for the Luftwaffe to conquer.

The success of the Luftwaffe up to this point seemed to indicate

that German air power was invincible; indeed, the very name inspired dread and fear, as the Germans had intended it should. But the triumphs of 1939 and early 1940 had all been scored against weak opposition, and there were limitations to German strength which time would increasingly reveal. Satisfied with the performance of their aircraft for the purposes in mind, leaders of the Luftwaffe had put various models into early mass production; the emphasis tended to be placed on numerical strength rather than on technical superiority. At points, perhaps too much faith had been placed in speed at the cost of armament. The Luftwaffe, moreover, seems to have been lulled into a false sense of security by its early successes. Though its commanders explained the British escape at Dunkirk by pointing to the unfavorable weather and a failure of supply resulting from the speed of the German advance, the success of the RAF at Dunkirk indicated that British aircraft possessed technical advantages that in all-out combat might prove decisive. That test soon came in the Battle of Britain.

The RAF and the Battle of Britain

The German bombing of Britain in World War II was not unexpected by the British, nor was it without precedent. During the conflict of 1914-18, the Germans had made 52 air raids against the British Isles, dropping 73 tons of bombs which killed 857 persons and injured 2,058. These raids helped to bring the Royal Air Force into existence as an autonomous force, for the enemy's action had pointed up the weakness of British air defenses and the desirability of carrying the air war to the German homeland. At the same time, British leaders in search of a strategy that would break the long and exhausting stalemate on the western front had by 1918 assigned to the air force an independent mission of strategic bombing. Accordingly, in March 1918 the air forces, theretofore divided between the army and navy, were unified in the Royal Air Force as a third and co-ordinate branch of the armed services, under the administrative control of the Air Ministry. Termination of hostilities that autumn did not permit the full development and execution of plans for a strategic offensive against Germany,* but, unlike the American Air Service, the RAF emerged from World War I with its independent mission and separate organization officially recognized.³⁰

* See above, pp. 15, 37.

As was the case with military aviation in the United States, however, the survival and growth of the RAF after 1918 was accomplished only with difficulty. In addition to postwar demands for retrenchment, the Admiralty began to press for control of naval air units, while the army attempted to regain control of land-based aviation. But the lessons of World War I as they pertained to aviation were more deeply impressed on the British mind than they were on the American. Moreover, Britain's geographic position and relatively small population with reference to Germany lent continuing validity to a doctrine of strategic bombardment which promised a means of striking at the very heart of the enemy and thus of avoiding the loss of life which in the first war had well-nigh bled England white. The RAF retained its autonomy; but, even so, sentiment for many years, like that in the United States, was hardly conducive to full military preparedness, and, after the new German menace became apparent, the RAF was forced to work against a decided disadvantage of time. Fortunately, the emphasis was placed upon quality. From 1935 forward, the Air Ministry proceeded with the development of long-range, heavy bombers—the twin-engine Manchester and the four-engine Stirling and Lancaster, the latter developed from the earlier Manchester. For the urgent needs of defense, the Hurricane and the Spitfire, two superlative fighter planes, were put into production after 1936. Production in quantity came slowly, for adequate manufacturing facilities were not immediately available. By September 1938, the month of Munich, only one squadron in the RAF had been equipped with Spitfires.

In its pilot and aircrew training, as in its equipment, the RAF demanded a high level of achievement.³¹ British air officials recognized that the geographic position of the British Isles was at once vulnerable and potentially threatening to any continental enemy. The situation demanded not only technical excellence of the air force but also an organization designed to facilitate the defensive and offensive functions which a European war would thrust upon the RAF. Accordingly, the RAF was organized into bomber and fighter commands. To these organizations there would be added later a coastal command, charged with special responsibilities for the protection of shipping.³²

By autumn of 1939 the RAF possessed a modest but well-trained force of airmen. Its bombers, fighters, reconnaissance planes, and flying boats were few in number but efficient in operation, and "shadow

factories" were ready to go into production to supplement the existing aircraft industry. At the moment the British did not possess the means to carry out a strategic offensive against Germany, but it was hoped that the badly outnumbered RAF would be able to hold off any German air assault until its own offensive could be inaugurated. The initial burden of the air war with Germany therefore fell to the Fighter Command.

During late 1939 and early 1940, German air action against Britain consisted largely of mine-laying operations to the east of the British Isles, while the RAF carried pamphlets instead of bombs to Germany. An air contingent had gone to France with the British Expeditionary Force, but with the exception of the action at Dunkirk, the performance of the RAF on the continent gave outsiders little suggestion of its real caliber. Conclusive proof of its technical superiority and of its staying power awaited the Battle of Britain—a contest fought wholly in the air and one of the truly decisive battles of history.

By the summer of 1940 the breath-taking advance of German forces had destroyed all effective resistance in France and seemingly presented to the Nazis an inviting opportunity to establish beyond question their control of all western Europe by invasion of an ill-prepared Britain. In fact, the Germans were less well prepared to seize the opportunity that lay before them than were the British to fend off such attacks as came. Though the Luftwaffe urged an immediate invasion, its commanders could not promise security for supply lines across the English Channel against the Royal Navy. The German navy was unable to provide such a guarantee, and, moreover, it lacked necessary equipment for moving an invading force across the intervening waters. The army itself, caught unprepared, required time for preparation and was reluctant to move without more adequate assurance from naval and air forces.³³ Immediate invasion appearing therefore to be inadvisable, the Germans decided to use the Luftwaffe as a strategic air force against the British Isles, with the hope that Britain would surrender or that at least an invasion would be made less difficult.

Preliminary to the battle, the Germans made sporadic raids during July and the first week of August 1940 in order to feel out British defenses.³⁴ The Luftwaffe by this time was equipped with 1,100 fighters and 840 bombers in operational condition, and the German aircraft industry continued to turn out approximately 500 combat

aircraft a month. For their bombing of England the Germans used four main types of bombers: the Junkers 87, the Junkers 88, several models of the Heinkel 111, and the Dornier 17 (sometimes known as the Dornier 215), with fighter escort usually by Messerschmitt 109's and 110's. The entire strength of the Luftwaffe was not thrown into the campaign at once. On 8 August the attacks began on a moderate scale, and during the next ten days mass formations of German bombers, accompanied by similar formations of fighters, made daylight assaults on shipping and southern ports. The effective opposition of Hurricanes and Spitfires, assisted by ground defenses, caused the Germans to call a brief halt after 18 August, on which day they sustained losses of seventy-one planes destroyed and twenty-three damaged. For the period extending from 8 August to 23 August total Luftwaffe losses were 403 destroyed and 127 damaged.* In contrast the RAF announced the loss of 153 planes.

In the second phase of the campaign, from 24 August through 6 September, the Luftwaffe revised its tactics. Bomber formations were reduced in size, while fighter escorts were increased. The attacks were directed mainly against airdromes and aircraft factories instead of shipping and harbors in an apparent attempt to knock out the RAF. As in the first phase, German losses were so heavy that the direction of the assault was again changed. The third phase, from 7 September to 1 October, saw the peak of the German air effort, which was directed toward industrial areas in general and London in particular. By the end of September the RAF had asserted its control of the air over the British Isles. During the third phase the British destroyed 435 planes and damaged 161, and total German losses since 10 July now amounted to 1,408 planes destroyed. Unable to sustain such losses, the Germans instituted still further changes in their tactics. Nearly all the so-called long-range bombers were withdrawn, while fighters and fighter-bombers continued the campaign with a decreasing number of daylight attacks and an increasing number of attacks at night. London was still the principal target, and the British suffered heavy casualties and extensive material damage, particularly during the night assaults when their fighter protection was not so effective as it was during the hours of daylight. Nevertheless, the Luftwaffe

* These are the revised figures, based on German records, announced in May 1947 by Mr. Philip Noel-Baker, British Secretary of State for Air (See *Flight and Aircraft Engineer* [London], 22 May 1947, p. 482, for complete table.)

had failed to achieve its objectives, and the aerial blitz was gradually reduced to intermittent attacks which continued throughout the spring of 1941. The Luftwaffe had sustained its first major defeat and Britain had been saved, for an invasion was contingent first of all upon defeat of the RAF.

It will take no credit from the RAF's outnumbered "few" to suggest that the Luftwaffe had been unprepared for the opportunity offered in the summer of 1940. Except for a few raids against French factories, the force had never been employed in a strategic effort of its own. Trained and equipped for another mission, the Luftwaffe lacked a heavily armed long-range bomber capable of carrying large bomb loads; * it tended to underestimate the bomb weight required to accomplish its ends; its fighters were not only technically inferior to the British but were at times misused; and faulty strategic planning was reflected in a tendency to shift targets before the completion of a sufficiently prolonged and concentrated effort.

The effect which the Battle of Britain had on subsequent planning of the German and British air forces was both characteristic and prophetic. True to their belief in the essentially tactical and supporting role of air power, the German army leaders felt that the results of the Luftwaffe's independent effort over Britain vindicated their position, and with this opinion Hitler seems to have agreed. No insistent demand was made for new and improved types of aircraft, nor was there any immediate program for increased plane production or pilot training.³⁵ Organizationally, the Luftwaffe continued to hold its independent position among the German armed forces, but operationally it remained an auxiliary arm. For a time the German Air Force intensified its operations against shipping in the eastern Atlantic and in the Irish and North seas. The attempted air blockade achieved a moderate degree of success, but the action of British fighter patrols and the arming of merchant vessels by mid-1941 appeared to be interfering considerably with Luftwaffe plans. Moreover, intensification of German air activity on other fronts in 1941 resulted in withdrawal of much of the Luftwaffe strength from the west.

For some months, Axis operations in North Africa, the Mediterranean, and eastern Europe received far more attention than did the dwindling assault on the British Isles, and the Luftwaffe and the RAF

* Its four-engine FW-200 (military version of the Focke-Wulf Condor) was employed almost exclusively in antishipping patrol.

became engaged in bitter aerial fighting on several fronts. Hitler had assumed personal control of all German military operations after 1940; in entering the desert fighting of North Africa, in sweeping through the Balkans, and in opening the eastern front the Fuehrer made extensive and effective use of the German Air Force in its accustomed role. By January 1941 the Luftwaffe had moved approximately 330 aircraft into Italy and Sicily, and on 18 January the Germans inaugurated the first of a long series of heavy air attacks on the island of Malta, a strategically located base for British operations in the Mediterranean. Before the end of the year, the island had experienced its one-thousandth air alert but continued to withstand the aerial pounding from the Axis.³⁶ By using advanced bases in North Africa, the Luftwaffe also began to strike at British forces in the Suez Canal area and to participate more actively in the Western Desert campaign. Early in April 1941 bombers were moved into the Balkans in preparation for the next blitzkrieg. From bases in Hungary, Bulgaria, and southern Germany, the Luftwaffe on 6 April began extensive operations in support of German ground forces against Yugoslavia and Greece. British and Imperial forces, though fully occupied in North Africa, came to the aid of Greece; as in the Flanders campaign of the previous spring, however, the German onslaught overpowered all opposition, and Axis victories followed in rapid-fire succession. By the end of April, most of the British forces had been evacuated from Greece, the Germans had entered Athens, and Luftwaffe units had quickly moved forward to prepare for an airborne attack against Crete. That attack came on 20 May with a spectacular and successful demonstration of glider-borne and parachute troop operations. After seizing key airdromes, the advance German forces were supplied and reinforced by Junkers 52 troop carriers, while Luftwaffe bombers attacked the British who were attempting to evacuate the island. By the first of June the British had been forced to yield Crete to the invaders. With new bases in Greece and Crete, the German Air Force was able to bring more strength to bear against British forces in the Western Desert; and, upon the opening of a British offensive in mid-June, the Luftwaffe for a brief period increased its support of German ground forces in North Africa.³⁷

Undoubtedly spurred by their successes in the Balkans and in the Mediterranean, the Germans on 22 June 1941 turned against the Soviet Union and inaugurated an offensive along the 2,000-mile Russian

front. Because Hitler was convinced that the Russian campaign would be concluded within a very short time, he was opposed to the destruction of Russian factories by bombing, and upon his insistence the Luftwaffe was used primarily as an extended form of artillery in support of ground forces. A similar employment of the Soviet Air Force was made by the defenders, but the opposition by that force was stronger than the Germans had anticipated and was more impressive than the performance of Russian air units in the Spanish civil war.

Soviet aviation, organized into a small naval air force and a larger army air force, had originated during the days prior to World War I and had been strongly influenced during the 1920's by the Germans.³⁸ The Soviet government had given considerable attention to the stimulation of popular interest in aviation and to the development of an aircraft industry, but at the time of the German attack in June 1941 the Soviet Air Force was reported to be inferior to the German Air Force in standards of aircraft and personnel. Perhaps because of the nature of the fighting which developed in the summer of 1941, the Russians employed their air strength almost entirely as a tactical force in co-operation with ground forces. Production of fighters and short-range bombers received major emphasis. During the early weeks of the hostilities, the Soviet Air Force suffered tremendous losses in combat with the Luftwaffe. In addition, the rapid German advance disrupted the air supply and maintenance system and a large part of the Soviet aircraft industry. But the Russians displayed a remarkable ability to continue their defense under the most adverse circumstances. In late 1941 the IL-2, or Stormovik, was put into action along the front, where it proved to be outstanding in attacks against enemy ground forces. During the summer and fall of 1941 the Soviet Air Force was completely reorganized, some assistance began to arrive from other nations opposed to the Axis, and the regenerated air force, operating in close co-operation with the Red army, continued to hold up against all the aerial might which the Germans could throw into the battle.

In its initial assault against Russia, the German army had been supported by 3,300 aircraft out of a total strength of approximately 5,900 operational and nonoperational aircraft. In the drive toward Moscow in the autumn of 1941, the Luftwaffe deployed almost 60 per cent of its strength along the eastern front, and it suffered extremely heavy losses. Yet the Russian operations caused no immediate increase in

German aircraft production; the German High Command, apparently still convinced that the hostilities could be concluded in short order, seemed to feel that no great expansion in the Luftwaffe was necessary. The operations in eastern Europe, the Mediterranean, and North Africa necessitated the use of so large a proportion of German air strength that air attacks against England and against British shipping in the west dwindled almost to the point of cessation. During the last six months of 1941 no night attack against Britain exceeded 15 per cent of the maximum scale of effort made during the autumn of 1940. The Luftwaffe was assuming a defensive attitude in the west. Hitler was said to have promised Luftwaffe leaders that the air offensive against Britain might be resumed after the defeat of Russia.³⁹ But the opportunity had come and gone in 1940, and the future held for the Luftwaffe in the west only a defensive mission.

Operations of the RAF after the fall of 1940 were as widely dispersed as were those of the Luftwaffe. The RAF had heavy commitments in North Africa, where it was joined by units of the Royal Australian Air Force and of the South African Air Force, and there were defensive responsibilities in the Mediterranean and in the Far East as well as in the home islands and over the submarine-infested waters about Britain. These commitments, however, did not prevent British air chiefs from developing a central strategic focus in their war plans. Tactical employment of air power was one method of aerial warfare, and a very necessary one, but the core of RAF thinking was expressed in the simple statement that the "bomb is the primary weapon of air power; the bomber is the chief means of conveying it to its target; an air striking force composed of bombers is the chief means by which a nation wields its air power."⁴⁰ The aggressive cast of RAF thinking had not led to neglect of the air defensive, as the performance of Fighter Command revealed in the Battle of Britain. But RAF doctrine stipulated that its defensive aviation should be no larger than was necessary to provide a reasonable defense against air attack. The emphasis belonged to the air striking force.

Nothing in the Battle of Britain had shaken the strong conviction with which these principles were held by RAF leaders, who saw in the German effort the power of the air weapon even when misused. They knew too how near the Luftwaffe had come to the achievement of its objectives, that had Goering been willing or able to continue the bombardment in spite of tremendous losses, the RAF must ulti-

mately have been overwhelmed. They believed that a strong British offensive against vital German objectives was the real answer to whatever renewal of the attack the Germans might plan. Only in this way could the enemy be placed on the defensive and forced to divert to defensive purposes, as in the manufacture of fighters at the cost of bombers, the resources that would otherwise be used to punish Britain. England, driven from the continent and deprived of allies, could reach her enemy only by the air.

For some months Bomber Command was obliged to aid Coastal Command and to use most of its slim resources in attacking the so-called invasion ports. But plans for a systematic and growing offensive against German targets were at the same time carried forward. Excellent bombers had been developed with an emphasis on range and bomb load; during the year following the Battle of Britain, the first-line strength of the bombing force would be increased by 50 per cent while the equivalent increase in bomb load would be 250 per cent.⁴¹ The scale of the bombing effort, now directed chiefly against the industrial Ruhr, remained relatively small in the fall of 1941, but British officials anticipated a monthly production rate of 500 heavy bombers by 1943 and looked forward to mounting ultimately an offensive at least fifty times greater than the existing scale of effort.⁴²

On America's entry into the war the AAF, with its own emphasis on strategic bombardment, would find in the RAF a stout and understanding ally. It is true that there were differences which distinguished the two forces: British experience had led to a preference for night and area bombing rather than the daylight, precision bombardment emphasized by the AAF. But these were differences of tactics rather than of strategy, of method and not of principle. Indeed, the differing methods favored were potentially complementary rather than irreconcilable.

CHAPTER 4

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THE AIR CORPS PREPARES FOR WAR, 1939-41

ON 28 January 1938 President Roosevelt declared our national defenses inadequate in the face of warlike preparations abroad which constituted "a threat to world peace and security."¹ He then asked for appropriations, largely naval, to improve our defenses. The itemized list of requirements included a sum for antiaircraft materiel but not for aircraft. A year later, with conflict threatening in Europe and an undeclared war raging in Asia, the President asked for a much larger sum with which to strengthen our military establishment. This time Air Corps requirements accounted for more than half the total requests.²

These appropriations marked the beginning of a radical change in our foreign policy. In the decade after World War I, repudiating the League of Nations, we had based our hopes of security on the outlawry of war, on international disarmament, and on our geographical isolation. In the mid-thirties, as other great powers began to rearm, we had sought further to insulate ourselves against foreign wars by enacting neutrality legislation, which in effect abrogated our traditional policy of freedom of the seas and which denied to our government the right to distinguish morally between aggressor nations and their victims. But by the beginning of 1939 we had turned to rearmament, and before the year had run out we had begun to scrap the neutrality restrictions. For three years before the Japanese attack on Pearl Harbor we were preparing, by these and other measures, for a war which we did not want but which many had come to feel was inescapable if we were to maintain our traditional way of life.

This preparation was without precedent in our national history, unless an exception be claimed for the very limited efforts of 1916-17. Our

habit in respect to war had ever been first declare, then prepare. That this policy had enjoyed the apparent sanction of success was not because of any virtue inherent in it. Actually our victories in foreign wars owed much to three factors: the weakness of enemies like Mexico and Spain; the involvement of enemies like England and Germany with other European powers; and the geographical isolation of our nation. In the period 1939-41 these factors obtained, if at all, in a lesser degree. Our potential enemies were strong, not weak; they were girded for war materially and spiritually. The friendly powers upon whom we might have depended for respite long shrank from war, and when war came they crumbled one by one until only Britain stood, and that precariously. And new techniques of war and new weapons—particularly the long-range bomber and the carrier-borne plane—had weakened the security once offered by our geographical situation. Given these changed conditions and the revolutionary doctrines and aggressive activities of the Axis powers, the United States could ill afford its customary delay in preparing for war.

The national administration appreciated the new threat to our security earlier than did most American citizens, but before Pearl Harbor the public had, for the most part, come to recognize that threat. This change in public opinion was in reality a psychological preparation for war; it was brought about by the sheer logic of events abroad and by the activities of private citizens, acting individually or through organized groups, as well as by the educational efforts of the national administration.³ Perhaps in the last analysis the psychological preparation was the most important single factor in improving our national defense, but this chapter is concerned only with more tangible measures inaugurated by the government.

When war broke out in Europe in September 1939, the United States declared its neutrality.⁴ Its stated policy was to remain out of the conflict if possible and at the same time to keep the totalitarian powers out of the Western Hemisphere. The latter objective demanded a further extension and an acceleration of previous programs for strengthening American armed forces. It called also, because of the threat of new weapons and modes of warfare, for the establishment of new strategic bases. The declared policy was wholly consonant with the Monroe Doctrine, and the measures taken to enforce it were, for a while, consistent with our traditional ideas of defense.

But under the impact of repeated Axis successes in Europe, the

United States evolved a dynamic, rather than a static, concept of defense. The new concept was influenced by the military techniques of the Nazis as well as by their unbroken string of victories. The pattern of political infiltration, violent air attack, and machine-like blitzkrieg encouraged the conviction that defense of the Western Hemisphere was closely linked with the survival of the Allies, especially of England: an Allied victory would forestall an Axis invasion of the Americas and even by merely prolonging Allied resistance the United States would gain time needed for building its defenses. So in 1940 aid to the Allies had become the avowed policy of the American government. This involved first the relaxation of neutrality restrictions, and it required a vast expansion of facilities for the production of munitions in order that the United States might become "the arsenal of democracy." That expansion was rapid, but until the nation was forced into a complete war economy production was never equal to the demands of our own forces and of the Allies. Hence allocation of the limited military supplies to the best interests of the nation became a problem of singular difficulty and importance.

In extending lend-lease aid to Great Britain in March 1941 the President declared the defense of that nation "vital to the defense of the United States."⁵ In this statement he merely followed a legislative formula, but the phrase had a wider implication. If indeed our safety was linked so closely with that of England, it was obvious that our collaboration with that power might not stop short of war. In anticipation of that possibility, American and British military staffs were active in 1941 in shaping strategic plans to govern combined Anglo-American operations should the United States be drawn into the war, and the Army and Navy prepared more detailed joint plans for meeting their respective responsibilities.

Preparations initiated by the United States government in the period 1939-41 involved, then, four interrelated activities: expansion of the military establishment; development of a new doctrine of hemisphere defense; aid to the Allies; and the formulation of strategic war plans. To an important degree the nature of those defense measures was determined by the nature of the conflict in Europe. Thus in light of the vital role played by the air arm in German offense and in British defense, it was natural that the United States should place great emphasis on the development of air power. And hence during the period 1939-41 the Air Corps figured prominently in each of the four aspects

of national preparation. Along with other arms and services, the Air Corps underwent a vast expansion. In measures contemplated and enacted for hemisphere defense, its long-range bombers were accorded a significant role. In aid to the Allies, air materiel was the most important item, and the Air Corps shared its planes and related equipment, often to the detriment of its own expansion program, with potential allies. And finally, in combined and joint plans the Air Corps assumed heavy responsibilities, particularly for strategic bombardment. A brief consideration of these four aspects of the preparation for war will not only reveal the state of preparedness of the Army Air Forces by 7 December 1941, but will illuminate much of the actual conduct of the war thereafter.

Expansion of the Air Corps

The presidential message to Congress of 12 January 1939 marked the beginning of a period of Air Corps expansion which did not reach its peak until 1944. Asserting that "increased range, increased speed, increased capacity of airplanes abroad have changed our requirements for defensive aviation," President Roosevelt strongly urged that \$300,000,000 be appropriated for the purchase of aircraft for the Army.⁶ The existing force, which the President described as "utterly inadequate," consisted of approximately 1,700 tactical and training planes, some 1,600 Air Corps officers, and 18,000 enlisted men.⁷ Within three months Congress had passed an emergency Army air defense bill substantially as requested, authorizing the procurement of 3,251 aircraft. This act approved a total Air Corps strength of 5,500 planes, 3,203 officers, and 45,000 enlisted men. The appropriation amounted to half as much as the Air Corps had received in the fourteen preceding fiscal years;⁸ approved strength for officers was doubled, for enlisted men was increased by 150 per cent.

Because the Air Corps had anticipated these authorizations, there was little delay in inaugurating its expansion program. As early as autumn of 1938 the Chief of the Air Corps had asked American aircraft manufacturers to prepare for an unprecedented growth, though no orders could then be guaranteed to them.⁹ By the time the new appropriations had been approved, contracts were being negotiated and tooling-up had begun. But the procurement of aircraft and related materiel items was only one of three major tasks confronting the Air Corps. Simultaneously personnel had to be recruited and trained, and

airfields and bases had to be acquired and built. Orderly expansion demanded that these three tasks be accomplished according to a balanced plan and at a synchronized rate; a lag or overdevelopment in any phase would delay or disrupt the program. Had expansion been carried only to the goal anticipated in the authorizations of early 1939, its prompt fulfilment would have been difficult; but under the impact of ever darker threats from abroad, the Air Corps was faced time and again with the need of increasing its estimates.

Since the mission of the Air Corps was the preparation of units organized, trained, and equipped for combat, the guiding factor in its efforts at systematic expansion consisted of a series of programs for the creation of a balanced air force of fully prepared combat groups. To take advantage of approved increases in aircraft and personnel, the Air Corps in the spring of 1939 formulated a plan calling for 24 tactical groups to be combat-ready by 30 June 1941.¹⁰ Long before this objective was reached, however, the trend of events abroad urged further expansion, and in May 1940 the Air Corps projected the 41-group program.¹¹ Within two months the goal was again revised upward in the 54-group program, which would provide an air force of 4,000 tactical planes, 187,000 enlisted men, 15,000 aviation cadets, and 16,800 officers.¹² In autumn of 1941, the Army Air Forces, in anticipation of the vast expansion contemplated in the as yet unapproved Victory Program for munitions, formulated the 84-group program, which would enlarge the force to a personnel strength of 400,000 by 30 June 1942.¹³ Little was done before Pearl Harbor to implement this more ambitious schedule. By 7 December, a total of seventy tactical groups had been activated, including fourteen heavy bombardment, nine medium bombardment, five light bombardment, twenty-five pursuit, eleven observation, and six transport groups.¹⁴ But many of the units were at cadre strength only, and few had been equipped with suitable aircraft. Actually the 54-group program, which came to be known as the First Aviation Objective, was the most realistic of the prewar plans; but its full achievement was impossible as long as the American aircraft industry was unable to keep pace with British and American demands.

The pattern of prewar expansion of the Air Corps was then one of repeated upward revision of goals, with each new objective rendered obsolete long before it had been realized. This was characteristic of the programs for combat units; it was equally true of airplane produc-

tion goals, of training schedules, and of provisions for new air installations. The constant modification of plans was not conducive to steady development; but neither, for that matter, were the dispatches from Europe. Under the impact of each new threat from abroad the President called for new defense appropriations and set new production goals. Congress readily made available the funds requested and authorized the expansion recommended. But one item—time—not even a generous Congress could grant. Hence the whole story of Air Corps activity in the period 1939-41 may be conceived as a race against time in a desperate effort to overtake Axis air forces which had long been on a war basis. To make the most of the time available, the Air Corps scrapped or revised many procedures of long standing; “judicious shortcuts,” to use an Army locution, became the order of the day in procurement of materiel, in training, and in the development of air installations. Undoubtedly the emphasis on speed and quantity in all phases of expansion often led to a lowering of peacetime standards of acceptance; but this tendency was not carried to dangerous extremes and qualitative losses were more than offset by quantitative gains. The process, in short, was typical of American mass production, with all the merits and the flaws of that system.

The aspect of expansion which was most eagerly followed by the American public was the rapid growth in the output of military aircraft. The seemingly miraculous accomplishments in this respect were essentially civilian rather than military. They were made possible through the fortunate combination of a highly adaptable industry, great national resources, and generous government aid; but the Air Corps played here a significant, if lesser, part. Contracts in 1939 were awarded on the basis of single-shift production, but factories moved steadily into a two-, then a three-shift schedule as more trained personnel became available.¹⁵ The Air Corps, along with the Office of Production Management, adopted various methods of acquainting manufacturers with new types of aeronautical equipment, of spreading production among more firms, and of increasing the capacity of the industry. “Educational orders” were placed with manufacturers, existing facilities were enlarged by the aid of government financing, and new plants were built by the government for operation by private firms. “Letter contracts” saved from one to three months in initiating the fabrication of aircraft by permitting manufacturers to purchase materials before a formal contract could be drawn up and signed.

Competitive bidding was supplemented by the more rapid procedure of direct negotiation of contracts. In general the Air Corps profited by its long and intimate association with the aircraft industry. Friendly personal relations made for mutual confidence, and reliance upon a telephone conversation or a quick airplane trip frequently obtained results which would have required weeks of formal correspondence. Some of the new methods were more expensive than the traditional ones, but by 1940 the nation, though it is now easily forgotten, had more money than time.

In some ways the Air Corps was able to exert a direct influence on speeding up production. Standardization of aeronautical equipment was one method. This subject had been under study by the Army and Navy for more than a decade. Joint efforts toward standardization had begun with such minor items as nuts, bolts, and pressure pumps. By the time rearmament began the Army and Navy were procuring aircraft engines from two major contractors under terms which made most models equally acceptable to either service. Further efforts were made toward standardization of aircraft and related materiel used in common by the U.S. and British services. Such a policy was advantageous to both manufacturers and purchasers; it facilitated mass production, lessened confusion for the producer, and reduced overhead costs. Again, the Air Corps was able to reduce the long delays usually experienced in testing new models for acceptance. An accelerated service-test procedure was instituted whereby experienced crews in relays gave an airplane 150 hours of almost continuous flight with a full military load. This system brought to light in one month defects which formerly might have required a year of service testing for discovery.¹⁶

These speed-up measures had begun with the initial appropriations for Air Corps expansion and had been intensified as U.S. and British demands increased. The 1939 Air Corps objective of 5,500 planes was soon raised to 10,000. Then on 16 May 1940, with the extension of the war in western Europe, the President called for an annual output of 50,000 aircraft and a total Army and Navy strength of the same number of planes; approved figures provided 36,500 for the Army, 13,500 for the Navy.¹⁷ The American aircraft industry was asked, in essence, to expand from its normal capacity of some 2,000 planes a year to more than 4,000 a month. Aircraft production in 1940 showed an increase of 250 per cent over that of the previous year.¹⁸ The chief

gains, both in planes manufactured and in the rate of acceleration, came in the latter half of the year, when the fall of France and the Battle of Britain lent a grim incentive to American efforts. By the end of September 1940, contracts were outstanding for 16,649 Army aircraft, of which 9,122 were tactical.¹⁹ In the second half of that year, 3,770 military aircraft were accepted by all users; in 1941, the total accepted was 19,428. Nor do these figures reveal the whole story; there was, because of a trend toward heavy bomber types, a marked increase in the average weight per plane as well as a numerical gain.²⁰ Of the aircraft delivered the Air Corps received far too few to equip its authorized fifty-four groups. Prospects for the future were, however, encouraging. The appropriations of 1939 and 1940 were dwarfed by those of the following year. In the first eight months of 1941, some \$6,500,000,000 was appropriated, the major part of which was allocated to the procurement of about 15,000 aircraft and the enlargement of productive capacity. All told, the Air Corps was authorized, in the three years before Pearl Harbor, to expend about eight billion dollars and to procure about 37,500 planes.²¹ It had not known such generosity since 1917.

One policy of the Air Corps ran counter to the insistence on mass production of existing models of aircraft. This was the continued stress on research and development. Efforts to develop new types of aircraft diverted talent from tasks of current utility to projects which, if successful, might pay dividends in the future. The policy was costly, but in view of the time lag between original design and quantity production, it was essential if we were to keep abreast of German developments. The results of the research and development program were not always spectacular. Many new airplane models were stillborn, or died in the experimental stage. But the same program which spawned such forgotten airplanes as the XP-44 or the XB-21 gave birth also to the B-29, designed in 1940. Mass production was hampered even more by the large number of modifications for current models which this policy encouraged. Changes in design and equipment made standardization difficult; "freezing" a model at a certain stage in its development would have made for more rapid production. But to keep abreast of foreign air forces, it was necessary to incorporate improvements which were constantly suggested by combat experience. The earliest and most obvious lesson which came from the air war in Europe was the need for heavier armor, greater defensive firepower,

and better protection against fire hazards. Hence in February 1940 the Air Corps completed plans for the installation of leak-proof tanks, protective armor, and greater armament, even at the expense of speed and useful load. A few months later Air Corps observers were sent to France and England to study the air war at first hand, and their recommendations led to further modernization of equipment.²² In May 1941, the War Department established the Special Observer Group in London,* and through its reports and those of occasional special missions the Air Corps was kept constantly informed of the latest materiel developments in England.²³ As a result of this information as well as of the work of American scientists and engineers, there was continued improvement in armament, signal communications, safety devices, and other equipment.

When the United States entered the war, the Air Corps had in production, in addition to other aircraft that would play no major part in operations, the following tactical planes:²⁴

Type	Air Corps Designa- tion	Name	Manufacturer	Designed	Flight Test	In Produc- tion
Heavy Bomber	B-17	Flying Fortress	Boeing	1934	1935	1936
" "	B-24	Liberator	Consolidated	1937	1939	1940
Medium Bomber	B-25	Mitchell	North American	1939	1941	1941
" "	B-26	Marauder	Martin	1939	1941	1941
Light Bomber	A-20	Havoc	Douglas	1939	1939	1940
" "	A-24	Dauntless	Douglas	(Navy SBD-3)	1941	1941
Pursuit	P-38	Lightning	Lockheed	1937	1939	1940
"	P-39	Airacobra	Bell	1937	1939	1940
"	P-40	Kittyhawk	Curtiss	1937	1938	1940
"	P-47	Thunderbolt	Republic	1940	1941	1941

The term "in production" is misleading if taken in any but its technical sense. It has no necessary connotation of mass manufacture, but means only that the plane had passed beyond the experimental and test phases, and that the first number acceptable for tactical use had rolled off the line. Thus whereas all the models mentioned above were "in production," they represented various stages in combat readiness. Some of them, notably the A-20 and P-40, had been tested in combat by British crews.²⁵ The B-26 was still an unknown quantity, but experience indicated that in the B-17, B-24, and B-25 the AAF had three bombers on which it could base its plans with confidence. The

* See below, pp. 577-99.

P-38 and P-47 were not to get into action until summer of 1942 and spring of 1943, respectively. The listed planes were the ones, however, with which we were to fight the first two years of the war. The only important new-type aircraft were to come in late 1943 or 1944—the P-51, first produced in quantity for the British, the A-36, the P-61, the A-26, and the B-29. Of the models actually in use before Pearl Harbor, tests and combat records seemed to indicate that as compared to like foreign types, our heavy bombers were superior to our medium and light bombers, while our light bombers were superior to our fighters. In general those judgments were borne out by later experience, though each of the planes underwent repeated improvements on the basis of combat experience.

Personnel requirements grew with the increase in authorization for aircraft. Intensive recruiting campaigns brought an influx of men as permitted under the higher ceiling set by Congress in 1939. In mid-1940, the Air Corps was authorized to procure flying cadets and Reserve officers without limit during the fiscal year 1941, and relaxed entrance requirements for cadets made possible the appointment of large numbers for flying training. The President's order in August 1940²⁶ calling up the National Guard and Reserve forces resulted in further increases in personnel. A still greater impetus to Air Corps enlistment, from autumn 1940 until Pearl Harbor, came from the Selective Service System program; even though procurement of pilots, aircrew members, and technicians was still on a volunteer basis, the prospect of compulsory service in an undesignated branch of the Army proved a potent spur to Air Corps enlistment. Under these various stimuli, the total number of Air Corps personnel jumped from 20,503 on 1 July 1939 to 152,569 just two years later, and the rate of expansion was rapidly increasing when the United States went to war.²⁷

Pilot training goals were successively raised to keep pace with the anticipated progress of other defense programs. From an objective in 1939 calling for the training of 1,200 pilots a year, the figure was raised in 1940 to 7,000, then to 12,000, and by directive of February 1941 to 30,000. By the fall of that year, when the 84-group program was under discussion, the AAF contemplated a training rate of 50,000 pilots a year by mid-1942.²⁸ These goals called also for the training of a proportionate number of other aircrew members and ground technicians. The Air Corps had neither the instructors nor facilities for

training men in such numbers—nor, for that matter, did it have the experience. Its training program at the beginning of 1939 was based on an annual graduating class of approximately 300 pilots.²⁹ To step that up in three years to a rate of 50,000 pilots was as difficult a problem as increasing aircraft production from 2,000 to 50,000. Again it meant the substitution of production-line techniques for handicraft methods. But the United States was as inured to mass education as to mass production.

To build all the additional facilities required by the new objectives would have required the outlay of vast sums; more pertinent to current attitudes was the fact that it would have delayed the training program by two precious years. Turning to civilian flying schools, the Air Corps found a limited reservoir of instructors, aircraft, flying fields, trained maintenance personnel, and experienced administrative officials. Consideration of the possibility of using civilian training facilities had begun in the fall of 1938; at that time there were twenty-three privately owned flying schools which held an approved rating from the Civil Aeronautics Authority (CAA). In the spring of 1939 preparations were made for nine of the schools to provide primary training for the Air Corps, though no contracts could be offered until the middle of the year. The undertaking was frankly in the nature of an experiment, but it proved eminently successful and gained wider use as the Air Corps expanded.³⁰ Another source of potential aid existed in a civilian pilot training program under the auspices of the CAA. Authorized in mid-1939 and later enlarged, this program created a great reserve supply of pilots which could be tapped in a serious national emergency. Graduates of this program could not, of course, be rated as combat pilots without Air Corps training, but many of them served as instructors in contract primary schools or later as ferry pilots.³¹

In the training of ground crewmen, Air Corps facilities were also supplemented by the use of civilian schools. At first only a few enlisted men were sent to civilian mechanics schools, but the numbers increased rapidly as the success of the experiment became apparent.³² By November 1941, the Air Corps had begun to train technicians, in its own and in contract schools, at a rate calculated to turn out 100,000 a year. Despite its great need for technicians, the Air Corps at that time was not using men taken into the Army under the Selective Training and Service Act; the single year of service authorized

by that act was too short a period to justify any extended technical training.³³

Civilian instructional facilities did not, of course, satisfy all the needs of the Air Corps. Additional schools and readjustments in existing arrangements were provided under the general expansion program. Training for individual flying specialties, which had been conducted under the Air Corps Training Center at Randolph Field, Texas, was expanded in July 1940 and placed under the direction of three flying training "centers," spaced geographically in areas enjoying the best flying weather and each including a number, steadily growing, of basic and advanced schools.³⁴ Responsibility for crew and unit training was vested in the GHQ Air Force and after June 1941 in its successor, the Air Force Combat Command. The Technical Training Command, with responsibility for all individual technical instruction, was established in March 1941.³⁵

In all phases of the training program, courses of study were compressed and pared down to the essentials. Curricula were made as pragmatic as possible; there was no time for theoretical frills. In training, as in the development of aircraft, efforts were made to incorporate tactical lessons of the air war in Europe, which emphasized the importance of formation flying at all altitudes, of accuracy in bombing and gunnery, and of the development of well-integrated combat crews.³⁶ If in these respects the green crews of the early months of the war did not always appear proficient, it was not for lack of appreciation of the importance of this sort of training. Rather it stemmed again from the lack of time, the shortage of instructors and equipment—especially of planes. The shortage of trainers, acute at first, was gradually overcome as factories concentrated first on their production; but the very serious dearth of combat planes, in which alone successful unit training could be carried out, lasted until long after we were at war. Lacking equipment, the schools improvised; lacking time, some adopted a 24-hour working day and a 7-day week. It was not the sort of school life which would draw the nostalgic alumnus back for a twenty-fifth reunion. But it got results.

The expansion of the Air Corps in materiel and in personnel required a comparable growth in its physical plant; new airfields were needed for the training program, new depots for maintenance and supply of the increasing number of planes, new bases for the tactical units responsible for national defense. This aspect of expansion, like

aircraft production and training, suffered from lack of time and from frequently enlarged objectives. Logically, the new installations should have been built before the training program expanded; actually, for want of time, the two processes went hand in hand. The rapid growth in personnel encouraged drastic innovations in the traditional pattern of military housing: hotels, warehouses, and other buildings were leased or purchased, and arrangements were made to take over or share commercial and municipal airport facilities. But in the meanwhile it was necessary to acquire new sites and to build new installations; as the Air Corps grew, new airfields mushroomed in every part of the United States. Each new field involved a basic decision on the question of temporary or permanent construction. Long-term needs of the Air Corps and the sudden availability of funds in quantities never before enjoyed argued, sometimes successfully, for substantial buildings of concrete or brick; the pressure of time and the obviously ephemeral nature of inflated requirements urged more rapid and less pretentious construction. The solution varied from field to field, often resulting in a compromise. The huge complex of fields around San Antonio, for example, came to include every possible combination of facilities ranging from the luxurious permanence of Randolph Field to the heat-baked tar paper hutments of the Aviation Cadet Center; from the huge shops and concrete ramps of Duncan Field to the cow-pasture sod of auxiliary landing strips. On Kelly Field alone, living quarters included modernistic duplexes, permanent barracks, shacks built during World War I, and a tent city. The general trend was toward less substantial construction as the Air Corps grew beyond any probable peacetime size and as it became increasingly obvious that national resources in labor and construction material were not unlimited.

This type of boom-time construction America understood; it repeated on a national scale a story which had been written in many an oil field and engineering project. The chief emphasis again was on speed. Personnel often moved into an air base long before completion of even the most essential facilities. In such a case, training might be conducted under canvas with construction proceeding on all sides, the instructor in his lecture competing with the noise of hammers and concrete mixers as well as of the ubiquitous trainer "buzzing" the field. Flying would begin with the completion of a single runway. Thereafter heavy construction equipment became a hazard to flying,

the movement of aircraft and fuel trucks an impediment to the contractor's job. Both training and construction activities suffered from the discomforts incident to new communities, as a field became alternately a dust bowl or a morass with each change in weather.³⁷ Primitive living conditions, makeshift classrooms, and overcrowded shops remained characteristic of the whole of the prewar expansion period. But construction, if rarely ahead of schedule, managed somehow to meet increasing needs.

While the Air Corps was expanding it was undergoing, as well, changes in organization and administrative structure. Inasmuch as the organizational developments followed a somewhat circuitous course, they sometimes tended to intensify, rather than assuage, the growing pains of the Army air arm. To the degree that these changes moved toward greater autonomy, however, they did aid in simplifying command channels and delimiting responsibilities more sharply. The process did not, in the period 1939-41, go far enough to satisfy those in the Air Corps who had long desired independence; but as we drew closer to war the air arm was able to assume an increasing share in the determination of its own policies.

At the beginning of 1939, the Army air establishment still was organized into two correlative but independent elements,* the Air Corps and the GHQ Air Force—the one charged with materiel and training functions, the other primarily with combat operations. With the inauguration of the expansion program, the need for a closer co-ordination and a centralized control became more pronounced, and on 1 March 1939 the GHQ Air Force was placed under the Chief of the Air Corps. The new relationship proved of short duration, for on 19 November 1940 the GHQ Air Force was removed from the jurisdiction of the Chief of the Air Corps and was accorded a separate status under the commander of the Army field forces. The move was opposed by most air leaders, since it precluded their ultimate command of the air striking force. The potentially serious effects of the change were in some respects mitigated by the appointment a week earlier of Maj. Gen. H.H. Arnold as Acting Deputy Chief of Staff. Holding this office as well as that of Chief of the Air Corps, he was in a position to co-ordinate the activities of the two elements of Army aviation.³⁸

By the spring of 1941, however, it was clear that co-ordination was

* See above, p. 32.

not a fit substitute for unity of command. In March, Secretary of War Henry L. Stimson directed that action be taken to place the air arm under a single commander. Shortly thereafter, the office of Assistant Secretary of War for Air was revived with Robert A. Lovett, who since December had served as special assistant on air matters, as the first incumbent. His able energies were directed to two major tasks: promotion of aircraft production and streamlining the organization of the Army air arm.³⁹ The resulting reorganization, which became effective on 20 June 1941, created the Army Air Forces. The AAF was superior to the Air Corps and to the Air Force Combat Command (AFCC), the agency replacing the GHQ Air Force.⁴⁰ General Arnold, as Chief of the Army Air Forces, was made directly responsible to the Army Chief of Staff and was given the responsibility for establishing policies and plans for all Army aviation activities. In accordance with a War Department policy toward decentralization of staff work, the Chief of the AAF was provided with an air staff to assist in formulating policy. General Arnold also retained his position of Deputy Chief of Staff, thus serving as the principal contact between the AAF and the War Department General Staff. Under General Arnold's jurisdiction, the new Chief of the Air Corps, Maj. Gen. George H. Brett, and the commanding general of the Air Force Combat Command, Lt. Gen. Delos C. Emmons, were made responsible for service and combat functions, respectively.⁴¹

The reorganization of June 1941 marked a notable gain for the air arm, yet in actual practice a number of defects soon appeared. The line of responsibilities between service and combat elements was not distinctly drawn, nor were relationships between the AAF and the War Department clearly defined. Both the AAF and the War Department continued to study the possibilities of further improvements. On the eve of war it had become clear that the most successful solution would involve a radical reorganization of the military establishment, with the AAF enjoying virtual autonomy within the War Department. Such a change was to come early in the war.⁴²

The trend toward autonomy, like the appropriations and authorizations for expansion, was symptomatic of the growing official recognition of the decisive importance of air power in national defense. Secretary of War Stimson, testifying before a joint congressional committee in August 1940, gave expression to the new attitude:

THE ARMY AIR FORCES IN WORLD WAR II

Air power today has decided the fate of nations. Germany with her powerful air armadas has vanquished one people after another. On the ground, large armies have been mobilized to resist her, but each time it was that additional power in the air that decided the fate of each individual nation.... [As a consequence] we are in the midst of a great crisis. The time factor is our principal obstacle.⁴³

This attitude was reflected in the sympathetic hearing accorded to AAF problems by the highest officials of the War Department. In commenting to Mr. Stimson in mid-1941 on the 500 per cent increase in AAF tactical squadrons, General Marshall wrote: "I do not think the public generally appreciates the vastness of the undertaking which has been imposed upon the Air Corps in both personnel and materiel."⁴⁴ That was almost an understatement.

The public could understand the announcement of a new goal for aircraft production, for trained pilots, or for organized combat units; rarely, one might suspect, did citizens consider the implications of those increases in terms of their own occupations. What was required, in civilian terms, was something like this: for a medium-sized college to jump its graduating class from 300 to 50,000 students; for a manufacturer just recovering from the depression to step up his production from 2,000 to 50,000 items a year; for a firm doing business on a national scale to expand its buildings and grounds by geometric rather than arithmetic progression. All this within three years and through the leadership of a very limited number of trained administrators. That progress was not smooth was all too apparent to those most intimately concerned—to the harried staff officer who saw each successive program scrapped for another more difficult of attainment; to the crew chief on the line whose team was constantly bled for cadres; to the group commander attempting to build an effective organization with green pilots and obsolete planes. It is little wonder that before the period ended the war's most expressive term—SNAFU—had been coined. Yet for all the confusion, by 7 December 1941 the AAF had achieved a remarkable expansion, and the essential soundness of its methods was to be manifested in its later development under war conditions.

New Concepts of Hemisphere Defense

The expansion of the Army air arm which began in 1939 was motivated by considerations of hemisphere defense. The term was new, the idea old. When President Roosevelt initiated the move toward re-

armament in his message of 28 January 1938, it was in the interests of "national defense," a familiar phrase.⁴⁵ In his comparable message of 4 January 1939, he repeated the phrase but he also pledged "our people and our resources" to the protection of the Western Hemisphere and its common ideals.⁴⁶ This was only a reaffirmation of the principles of the Monroe Doctrine, but the nature of the threats against the Americas and the means of defense were rapidly changing.

Traditionally, military threats against the hemisphere had been conceived in terms of a naval attack followed by an invasion by ground forces. Against such dangers, the U.S. Navy had generally been considered our main bulwark, and since the inception of the Monroe Doctrine we had enjoyed the tacit support of British seapower. Only to the archisolationist did defense mean literally the repulse of an enemy from our own shores. In January 1938, the President stressed the need of keeping "any potential enemy many hundred miles away from our continental limits."⁴⁷ The war in Europe did little to allay anxieties concerning an amphibious assault in force, and by the end of June 1940 the danger seemed acute. The Nazis had overrun Poland, Norway, Denmark, and the Low Countries; France had collapsed and Italy had joined her Axis partner. The British Expeditionary Force, broken as an effective army, had barely escaped from Dunkirk, and the Atlantic coast from Narvik to Bordeaux was in the hands of the Germans, who seemed poised for the assault on Britain. Gone was American skepticism over the "sitzkrieg," and our ideological sympathy toward Britain was sharpened by concern for our own security. It required not too much imagination to envisage a complete Axis victory in Europe which would at best deny us the moral support of the Royal Navy with its shipyards, and, at worst, place that fleet and the French at the disposal of the Germans. Such additions to a combination of Japanese, Italian, and German sea forces would have imposed upon the U.S. Navy an impossible task. That the gravity of the situation was widely appreciated in the United States was shown not only by the wide publicity given to the threatened realignment of seapower,⁴⁸ but also by the celerity with which Congress sped through additional appropriation bills to give us a "two-ocean navy."

But there were, as well, threats of a new sort. The war in Europe, with its co-ordination of military and political action, its emphasis on surprise and speed, and its concentration of power against nodal points had indicated that aggression against the western world might

assume novel forms, not always frontal in character. Hemisphere defense was dependent upon a few strategic areas which, if widely dispersed, were highly concentrated internally: the New England-New York-Norfolk area, the Great Lakes industrial region, the "Soo" locks, the West Coast aircraft factories, the Panama Canal. Any of those might be endangered by the new methods of attack. By taking control of French or English colonial possessions, victorious Axis powers might lodge themselves at the very threshold of either American continent. Certain of the Latin-American nations seemed to offer a fertile field for Nazi techniques of infiltration and engineered revolution. With or without such political preliminaries, the air weapon had ominous potentialities. German bombers of known types could not operate directly from Europe to the United States, but they could reach Newfoundland from Norway or Brazil from Africa. From secretly prepared fields they could strike at key positions either with bombs or with paratroopers. The presence in several Latin-American states of German airlines and the Nazi practice of mounting air operations with the aid of "students" and "tourists" and "civilian technicians" caused grave concern for the security of the Panama Canal. And finally, the increasing tension in the Far East and Japan's known strength in carriers called attention to the vulnerability of the Pacific approaches to the hemisphere.

In January 1939 the President had spoken of the "new range and speed to offense."⁴⁹ In his request to Congress for additional defense appropriations on 16 May 1940, he enlarged upon that theme, enumerating the new forms of attack and paying special tribute to offensive air power. Facing the new threats, "the American people must recast their thinking about national protection." Under the new dispensation, national defense was possible only through total hemisphere defense. And, "Defense cannot be static. . . . Defense must be dynamic and flexible."⁵⁰

This was a language the Air Corps understood. From the days of Billy Mitchell, its leaders had advocated a defense thrusting far from our shores.* Originally this had meant the use of a mobile striking force to intercept an enemy approaching by sea. The Navy had bitterly resented Air Corps intrusion into what had been its special mission. The Joint Action of the Army and Navy of 1935, though none too precise in its delimitation of responsibilities, had minimized

* See above, Chap. 2.

the role of the Army air arm in the interception of enemy naval forces,⁵¹ but that mission had been a leading factor in the Air Corps' emphasis on the long-range bomber. Now the new threats to hemisphere security added less debatable obligations, which the Air Corps proposed to meet with a force of heavy bombers.

Actually, Army air leaders had anticipated somewhat the President's public statements of our changing concepts of defense. In June 1938, the Air Corps Board had begun a study on the "Air Corps Mission under the Monroe Doctrine."⁵² During the following March basic air doctrines were restated, so that the most important task became defense against air attacks, to be achieved by the "destruction of enemy aviation at its bases."⁵³ In June 1940, the Air Corps described its role in hemisphere defense as entailing six specific missions in the following order of importance: to (1) deny the establishment of hostile air bases in the Americas; (2) defeat hostile air forces lodged in the hemisphere by attacking their bases; (3) defeat hostile air forces by aerial combat; (4) prevent the landing of expeditionary forces by attacking transports and supply ships; (5) co-operate with the mobile army in ground operations; and (6) operate in support of or in lieu of U.S. Navy forces against hostile fleets.⁵⁴

In each case the statement of doctrine was made to guide the expenditure of funds authorized to the Air Corps for meeting its new obligations. The accepted concept of the air mission which subordinated local air defense and close support of ground forces to long-range counterair activities was reflected in the practical measures taken. Units of the GHQ Air Force did participate, with the inadequate equipment available, in Army maneuvers in 1940-41, and by the time war came, the AAF had taken certain steps, largely modeled on British experience, for local air defense of certain vital areas.* But the main concern of Army airmen was in defense at a distance by means of the mobile striking force. This demanded, as they reiterated on numerous occasions, a wider radius of action, which could be achieved by increasing the range of their bombers and acquiring new bases, strategically located. In the summer of 1938 our best heavy bomber was the B-17, with a theoretical useful radius of 1,000 miles; a new experimental model, the XB-15, seemed to promise better performance. The Air Corps Board in October recommended as a minimum requirement a 1,500-mile bomber.⁵⁵ In June 1939, another air board

* See below, Chap. 8.

(Kilner Board) called for the development of two new heavy bombers, with radii of 2,000 and 3,000 miles respectively.⁵⁶ A year later, when the fall of England seemed a possibility which might deny us any friendly base within striking distance of German airfields and ports, plans were begun for a 4,000-mile-radius bomber.⁵⁷ Funds were now available for research and development, and projects were initiated which were in time to produce the B-29 and B-32, the XB-35 and XB-36. These planes were not expected to be ready for combat before 1945-47, and in the meanwhile the B-17 was considered inadequate for the Air Corps mission, "specifically in the Caribbean area."⁵⁸ But the establishment of new bases could extend the capabilities of existing equipment to the point where it could cover all sea and land areas from which enemy air power could endanger our security. Hence the acquisition and construction of new bases became one of the most urgent of our defense measures. This task was not, like the development of new planes, a responsibility of the Air Corps, and indeed some of the new bases were primarily for use of the other arms. But the policies of the national administration enabled the AAF to prepare its defenses in accord with its accepted doctrines.

In the Pacific, the problem was essentially one of extending facilities in our own territories. In the Atlantic, it meant securing privileges from other American nations or from friendly European powers. The danger zones were obvious. In the North Atlantic, Iceland, Greenland, and Newfoundland lay as steppingstones between Norway and the New England-New York area. In the South Atlantic, northeast Brazil offered a likely avenue of approach. Natal, a focal point for established trans-Atlantic air routes, was only 1,600 nautical miles from Africa. To meet an invasion of this area, U.S. planes would have to fly some 2,600 miles from Puerto Rico, the nearest U.S. territory. Since Air Corps intelligence in the spring of 1940 wrongly credited the Axis powers with a surplus over their European requirements of some 4,100 planes capable of making the Africa-Natal flight,⁵⁹ the implied threat was no light one. Finally, the Caribbean constituted a danger spot inasmuch as its eastern approaches were but poorly fortified.

Solidarity of the nations of the Western Hemisphere was a prerequisite for any successful scheme of total defense in the face of the new threats. That solidarity had been reaffirmed in the Declaration of Lima on 24 December 1938,⁶⁰ and practical measures to achieve it

were taken in a series of inter-American agreements which followed. These agreements provided for mutual action to preserve the peace of the hemisphere, and in some instances arrangements were made with individual countries which gave U.S. forces an entree into strategic areas normally closed to them. On 3 October 1939, American foreign ministers, meeting in Panama, adopted a declaration of neutral rights and established a safety belt 300 miles in width around the entire hemisphere, except off Canada and Newfoundland, already at war.⁶¹ The neutrality zone was soon violated by European belligerents, but in July 1940 the American republics took concerted action more forceful than the Declaration of Panama. At Havana a conference of American foreign ministers made the Monroe Doctrine multilateral, agreeing that their respective governments would oppose any change in sovereignty of European colonies in the Western Hemisphere and would combat Axis attempts to undermine American institutions.⁶² The missing link in the inter-American security system was supplied on 18 August 1940 when the governments of Canada and the United States announced the establishment of a Permanent Joint Board on Defense, with equal representation from each nation, to co-ordinate defense measures for North America.⁶³

Co-operation with friendly nations made it possible for the United States to extend greatly the Atlantic perimeter of hemisphere defense. The first step was made public on 3 September 1940 when President Roosevelt revealed an agreement transferring fifty over-age destroyers to Great Britain in exchange for the right to establish air and naval bases at eight strategic points in the Atlantic and Caribbean areas.⁶⁴ By 27 March 1941, the two governments had completed negotiations which gave to the United States a 99-year lease on sites in Newfoundland, Bermuda, the Bahamas, Jamaica, Antigua, St. Lucia, Trinidad, and British Guiana.⁶⁵ Prior to this agreement Canada had taken over some of the responsibility for garrisoning certain Caribbean islands, Bermuda, and Newfoundland.⁶⁶ Co-ordination required under the new arrangement was assured by the Permanent Joint Board on Defense. In October 1940 the board, in a study on Newfoundland, had recommended certain specific defense measures and a division of responsibilities between Canada and the United States.⁶⁷ At the same time the Air Corps was conducting a survey of possible air base sites, and on the basis of these investigations four locations for Army installations were chosen. It was decided to station Air Corps units at the

Newfoundland Airport at Gander Lake as soon as possible.⁶⁸ The latter arrangement paid respect to the capabilities of such German bombers as the Heinkel 117 and the obsolescent Heinkel 111. Either had range sufficient to fly from Norway to Newfoundland and thence, with one refueling, to New York. Air Corps planes based at Gander Lake could patrol the northeast approaches to the hemisphere and could interdict Axis attempts to establish airfields on the continent or on Greenland, some 800 miles to the north.⁶⁹

A second forward thrust of our defense outposts came on 9 April 1941 with the signing of the United States-Danish agreement concerning Greenland. Since the German occupation of Denmark on 9 April 1940, Greenland had been cut off from the mother country, but had maintained its allegiance to the royal government. The people of Greenland had early expressed the hope that the United States would continue to keep in mind the exposed position of the island.⁷⁰ United States protection was warranted both by the Monroe Doctrine and the Act of Havana. Reconnaissance flights over the island by Luftwaffe aircraft and repeated German efforts to establish meteorological stations there seemed to demand some action on our part; the Greenland coast was only 1,500 miles from Nazi bases in Norway, and weather reports from the island would have been helpful to the Luftwaffe in planning air operations against England. The joint agreement of April 1941 clarified U.S. responsibilities in defending Greenland, while granting to the government of the United States the right to construct, maintain, and operate such landing fields and other facilities as might be necessary in fulfilling its obligations.⁷¹ A south Greenland survey expedition, composed of Army and Navy personnel, had sailed from the United States on 18 March 1941, and during the remaining spring months possible airfield sites were inspected and plans were made for establishing the needed stations.⁷² The fields, when finished, were to improve the northern air route to England, but their first purpose was defensive. Their completion had become a matter of urgency with a German air attack in February against Iceland, only 400 miles to the east.⁷³

That attack argued too for the next eastward advance of the American line of defense. Only by a geographical tour de force could Iceland, lying athwart the twentieth meridian, be brought into the Western Hemisphere. But of its strategic importance there could be no doubt. In German hands it would have constituted a grave menace

to shipping in the North Atlantic, and to Greenland and the North American continent as well. In friendly hands it could serve as an air and naval base for protection of convoy lanes and as a convenient link in the northern air route between the United States and Britain. It was a realization of these factors which had led England to occupy Iceland in May 1940, and which later persuaded the United States government to share British responsibilities there. On 7 July 1941, President Roosevelt transmitted to Congress the text of communications between this government and that of Iceland, and announced the arrival on the island of U.S. Navy forces.⁷⁴ At the suggestion of Iceland, the United States had agreed to supplement and eventually to replace the British garrison. The terms of the agreement assured full recognition of the sovereignty, independence, and interests of Iceland, and stipulated specifically that "sufficient airplanes for defensive purposes" would be deployed on the island. The first AAF aircraft arrived on 6 August 1941.⁷⁵ Planning for the relief of British troops had begun in June, when U.S. military and naval observers stationed at London had made a survey of the island. The first American ground troops were dispatched in September, but again war caught us far short of our goal.⁷⁶

With the occupation of Iceland, the United States had pushed the periphery of its North Atlantic defenses to its ultimate position. The eastward march of the successive steps taken in 1940-41 pointed logically as well as geographically to Britain, and in 1941 we had already made plans to utilize that island as a base against Germany should we go to war.* But that use could not be considered defensive save in the very broadest sense.

Meanwhile, defense bases in the Caribbean and South Atlantic areas were being moved outward in a similar fashion. The Caribbean Sea was shaped somewhat in the fashion of a very flat wedge of pie; its sides, the coasts of Central and South America, converged at the Panama Canal, now rendered doubly important by the increased duties of the U.S. Navy in two oceans. The edge of the crust was formed by the Greater and Lesser Antilles. Their arc threw a bold protecting bastion around the north and east of the sea, and Army airmen had long advocated the establishment of an air base on Puerto Rico, our most important possession in the chain. The emergency of 1940 caught us with no preparation there, however, and air defense of the canal

* See below, pp. 137-41, 147-49.

devolved wholly upon units deployed in its immediate zone. Now agreements with Great Britain made possible the construction of a string of airfields in the Bahamas, Jamaica, Antigua, St. Lucia, Trinidad, and British Guiana, as well as on Puerto Rico. These promised effective control of the approaches to the Caribbean, and hence to the canal. The AAF was able also to expand existing facilities in the Canal Zone and to prepare auxiliary fields in Central American republics. Agreements with those countries brought about a progressive liberalization of flight restrictions, which greatly simplified air operations in defense of the Zone. Farther south, comparable arrangements were made. In November 1941, U.S. forces occupied Surinam (Dutch Guiana). The move, made in co-operation with the Netherlands and Brazilian governments, was designed to protect the invaluable bauxite mines of Surinam, and here as in Greenland and Iceland, the United States was pledged to withdraw at the termination of the international crisis.⁷⁷ Now, with bases in both British and Dutch Guiana, the United States was in position to move forces, spearheaded by heavy bombardment units, to thwart any threatened Axis invasion of the exposed angle of Brazil. All told, the new bases would constitute, when garrisoned by fully equipped air units, an effective defense in depth of the most vital positions toward our south.

Reinforcement of hemisphere defenses on the Pacific side reflected both our comparatively late appreciation of the Japanese threat and the immediate concern with the European Axis. Hence, in magnitude and number, the measures taken to strengthen the Alaska-Hawaii-Panama triangle were less impressive than like activities in the Atlantic-Caribbean areas. As relations with Japan sharply deteriorated in 1941, means were readily authorized for improving Pacific defenses. But time was running out; few of the measures were complete when Japan attacked and some were only on paper. Almost without exception, the several specific improvements made in the area had long been urged by the Air Corps. By 1940 valuable aid had been obtained from the Civil Aeronautics Authority, but in many instances action was incited only by the advent of war. Thus in view of the vulnerability of the western approaches to the Panama Canal, the Air Corps throughout the rearmament period had wished to secure rights to establish air bases on Cocos Island and the Galapagos Islands, from which long-range aircraft could patrol far beyond the striking range of a carrier task force. It was the current policy of the government, however, not to

press for such rights from Costa Rica or Ecuador, and there was no westward extension of canal defenses until 1942.⁷⁸

Farther west, the exposed position of our Pacific islands made improvement of their defense seem more urgent. It had long been considered axiomatic among our military leaders that the Philippines could not be profitably defended, with the forces likely to be available for use, against a determined Japanese attack. In 1941, however, measures were taken to strengthen our forces there, particularly in air categories: a strong bombardment force would threaten the left flank of a southward drive by the Japanese and hence might serve as a powerful deterrent. Accordingly, in 1941 there was an extension of air installations on Luzon and Mindanao and, belatedly, an effort to reinforce air units stationed there.⁷⁹

The key to our Pacific defenses was the Hawaiian Islands, or more specifically, the naval base at Pearl Harbor. Army air units in the Territory existed primarily for the defense of this and other naval and military installations on Oahu, and in the past had been concentrated on that island. From 1939 on, the Air Corps was attempting to increase the range of the striking force which constituted its chief weapon. By 1941, auxiliary fields were set up in other islands of the group through the aid of the CAA. This policy was carried further by the preparation of landing strips on such far-flung islands as Midway, Johnston, Palmyra, Canton, and Christmas.⁸⁰ While facilities at those locations would support only limited operations and were not intended as permanent bases for heavy bombers, the new airfields were indicative of the gradual acceptance of AAF concepts of mobility and a positive defense; their most obvious utility lay in the fact that, with transit rights assured by the Australian government, they constituted a means whereby heavy bombers could be ferried from the States, via Hawaii, to Luzon. Local defense measures on Luzon and Oahu included the reinforcement of fighter units there and the establishment of fighter control sectors with radar warning equipment. These measures, like all others on those islands, proved inadequate against the Japanese surprise attacks, but the advanced island airstrips were to be of signal importance in the Pacific war.

Reinforcement of the northern corner of the Alaska-Hawaii-Panama triangle also came relatively late. Since the 1920's the Air Corps had been calling attention to the strategic importance of Alaska and to its vulnerability. In 1935, construction of an air base there had

finally been authorized, but it was only after funds had been made available in 1939 that construction had begun on a cold-weather experimental station at Fairbanks and a major operational base at Anchorage. Commercial aviation, already an accepted part of Alaskan life, provided some facilities, and the CAA now inaugurated an extensive development program which included the preparation of emergency landing fields and other aids to air defense. Under guidance of the Permanent Joint Board on Defense, arrangements were made to establish air route staging facilities in Canada which would tighten the air link between the United States and Alaska. And, as elsewhere, protection of Alaska called for more advanced outposts. Responsible for air defense of the naval base at Dutch Harbor on Unalaska, the Air Corps instigated preparation of airfields leading to Umnak, farther out in the Aleutians.⁸¹ Those fields, like the island strips in the Central Pacific, were to prove their worth in the early months of the war.

That in general was true of the whole system of extended defenses, though only in the Philippines, Hawaii, and Alaska was the system tested by air attacks. Preparations for defense were incomplete, but in 1942 the security afforded by the defensive measures begun during the period 1939-41, and rushed to completion after Pearl Harbor, was to allow the United States to turn most of its efforts to preparation for the offensive. In turn, our ability to rearm and to establish new defense lines without interruption from our potential enemies had been made possible by the efforts of nations actually at war with the Axis powers. Hence, support lent to those nations may also be considered a very real part of our preparations for war.

Aid to the Allies

When war began in Europe in September 1939, the majority of American citizens shared two sentiments: a sympathy with the allied cause against Germany and a strong desire to stay out of the conflict. These sentiments were expressed by President Roosevelt in a radio address on 3 September: "This Nation will remain a neutral nation, but I cannot ask that every American remain neutral in thought as well."⁸² American attitudes, if they were correctly interpreted by public opinion polls, tended to shift in emphasis with the progress of events abroad during the period from Munich to Dunkirk, though

they showed on the whole a high degree of consistency.⁸³ The most important changes occurred after June 1940.

On the eve of the European war, most Americans seemed to be confident of an ultimate victory for England and France;⁸⁴ and, if the blitzkrieg in Poland raised doubts, the "phony war" of the winter months allayed them.⁸⁵ The spectacular spring victories of the Nazis, climaxed by the fall of France, hit the United States like a cold douche. England's chances of survival seemed at best no better than even, and our own immunity from war seemed challenged.⁸⁶ German soldiers looking across the Straits of Dover were chanting "Today England, tomorrow the whole world." The song, if somewhat boastful, did not sound like a lullaby in the United States. Our rearmament program was gaining momentum but wanted time for full achievement. To many it appeared that we could complete that program without hostile interruptions only if the United Kingdom should continue as a belligerent with a fleet and an air force in being. So it was national self-interest as well as sympathy that led an increasing proportion of Americans to advocate measures in support of the British.⁸⁷ This view was aptly summarized in the title of the citizens' group which most actively supported it—the Committee To Defend America by Aiding the Allies.

United States and British leaders declared, whether candidly or not, that these measures need go no further than making available to England the products of American industry and agriculture. Furnishing munitions did remain the most effective means of aiding the allies, though by autumn 1941 "measures short of war" had carried us in the Atlantic to orders "to shoot on sight."⁸⁸ The task of providing weapons to England and other friendly powers, though undertaken in order that we might have time to arm our own forces, greatly complicated that process. Because of the limited capacity of a munitions industry not yet at peak performance, there was inevitably a conflict between the demands of the U.S. services and the allied nations, and the apportionment of weapons to our greatest advantage required rare judgment and tact and firmness. In the two years before Pearl Harbor there were numerous changes in the machinery for allocation and in the details of policy. But in respect to air materiel, the most important item involved, the administration tended after Dunkirk to favor England's immediate combat needs over the requirements of Air Corps expansion. In the course of 1941, as it became more apparent that we

might enter the war, plans were developed to create by combined effort a huge pool of weapons to serve all anti-Axis nations according to their needs and capabilities.

At the outset of the European war, the sale and export of munitions to belligerents were strictly curbed in the United States by the "neutrality legislation" of the 1930's. On 4 January 1939, President Roosevelt had pointed to a lesson from the immediate past: that "our neutrality laws may operate unevenly and unfairly—may actually give aid to an aggressor and deny it to the victim."⁸⁹ As successive victories of Germany in Europe and of Japan in Asia made it appear expedient that we extend material aid to nations resisting them, neutrality restrictions were progressively relaxed. The first step, the removal of the arms embargo feature, was urged by the President in July 1939 and again on 21 September; it was effected on 4 November.⁹⁰ The new "Cash and Carry" act allowed belligerents to acquire arms within the United States by cash purchase. Effectively, of course, this applied only to the Allies, and for them the great productive capacity of the United States promised to be of prime importance. For the immediate future, however, aid would be limited; the munitions industry in the United States had only begun what was to be a tremendous growth, and excessive foreign orders would impede both its orderly expansion and that of our armed forces.

The Air Corps had long favored the sale to foreign powers of its own tactical models and had attempted to liberalize War Department policy in that respect. Originally this was through no particular desire to aid any group of nations, and to a public made conscious of the horrors of war by the "Merchants of Death" sort of literature, it was not always popular. The Air Corps hoped, however, that quantity sales abroad of its own models would promote expansion of the aircraft industry without expense to the government, and would help defray the cost of research and development of new planes. Little military risk seemed to be involved, since we could stay ahead of any nation which depended on us for air weapons; and in neutral countries which did not support an aircraft industry the export of American military planes could prove a valuable diplomatic weapon against the Axis. Certain complex problems were inherent in such a policy: whether planes should be released only to designated nations or to all alike; how long a time lag to require between the acceptance of a new model and its release abroad; the degree of security which should be main-

tained in regard to secret weapons; and the possible interference of foreign orders with production for the Air Corps.⁹¹

Under the "Cash and Carry" act, various Air Corps models, some obsolescent, some more modern, were released to France, England, and other nations. On 25 March 1940, a more liberal foreign release policy was adopted, which authorized the sale to foreign states of certain stipulated modern types* as soon as a superior type or model could be furnished to the Air Corps.⁹² The crisis brought on by German victories during the next three months greatly stimulated the demand for planes on the part both of Britain and the United States. The British assumed all aircraft contracts of the fallen French government, and with these and their own orders their program called for about 14,000 planes. The Air Corps' new 54-group program called for a total delivery, by 1 April 1942, of 21,470 tactical and training planes. These huge orders, plus Navy demands, could not be filled within the time limits set. Since English combat needs on the eve of the Battle of Britain seemed more urgent than our own expansion requirements, it was agreed on 23 July that the Air Corps should defer the delivery of 8,586 planes in favor of the British.⁹³ This agreement did not enjoin the British from placing additional orders; and in the face of what might develop into serious competition, the Air Corps feared that its own program might further be retarded.

To insure a systematic and equitable allocation of aircraft and engines, an organization which came to be known as the Joint Aircraft Committee (JAC) was established on 13 September. It included representatives of the three principal customers of the American aircraft manufacturers—the British Purchasing Commission, the Navy's Bureau of Aeronautics, and the Air Corps. The Chief of the Air Corps, whose office had taken the initiative in securing authorization for the JAC, served as its chairman. Eventually the functions of the committee were greatly extended. In January 1941 it was given control over all foreign contracts for aircraft materiel, and it became possible then to integrate all production plans into a single schedule.⁹⁴

Existing legislation precluded the extension of loans to foreign powers for financing the purchase of weapons in the United States, and as British dollar credit shrank it became obvious that some new method must be sought if the effort to supply Britain with arms was

* B-17, B-24, B-25, B-26, A-20A, P-40, O-52, PT-13B, PT-17, PT-18, PT-19, BT-13, BT-14.

to continue. In an address to Congress on 6 January 1941, President Roosevelt suggested the means;⁹⁵ it became law with the defense-aid act of 11 March, generally known as the Lend-Lease Act.⁹⁶ Under this arrangement air materiel continued to be the most important item of export, and it was essential to the success of the Air Corps program that allocations under the new act be constantly reviewed in the light of "changing political and strategic conditions." In the machinery set up for administering lend-lease, the Joint Aircraft Committee was designated to serve as the Defense Aid Supply Committee for all aviation materiel. The JAC thus acquired important administrative responsibilities, but the broad policies governing the allotment of aid were determined by the President.⁹⁷ The fundamental policy for aircraft was established within a few weeks, though the administrative details continued to be subject to constant modification.

In the first lend-lease directive, the President extended its benefits to Great Britain,⁹⁸ thereby initiating the most powerful of the "measures short of war" to aid that nation. It was not at all certain, however, that such measures would be sufficient or that the United States could maintain its neutrality. On 27 March, Congress authorized the appropriation of \$7,000,000,000 for lend-lease.⁹⁹ On the same day, committees representing the U.S. and British service staffs, which had been studying jointly the best means of military collaboration if the United States should join in the war, presented their first report (known as ABC-1) on the grand strategy to be followed in a possible Anglo-American war against the Axis.* Two days later a second report, on air collaboration, was submitted.¹⁰⁰ Known as ABC-2, this report recommended that aircraft production be accelerated in both countries. As its first objective, the United States should accomplish the AAF's 54-group program, with the view of employing a substantial portion of those groups from England if America entered the war. The AAF should set up as a further goal a program calling for 100 groups, considered the minimum requirement if the British Isles should be lost as a base for our air forces. But it was also recommended that delivery of tactical airplanes be made contingent upon the ability of the several services to use them effectively and that therefore the AAF should defer the full realization of its 54-group program to the extent that aircraft thus made available could be used in the air offensive against Germany. Essentially, this was an extension of the policy agreed on the previous July.

* See below, pp. 136-39.

Apparently the report was not officially approved at the governmental level; yet in spirit if not in letter, its principles served as a guide to aircraft allocation.

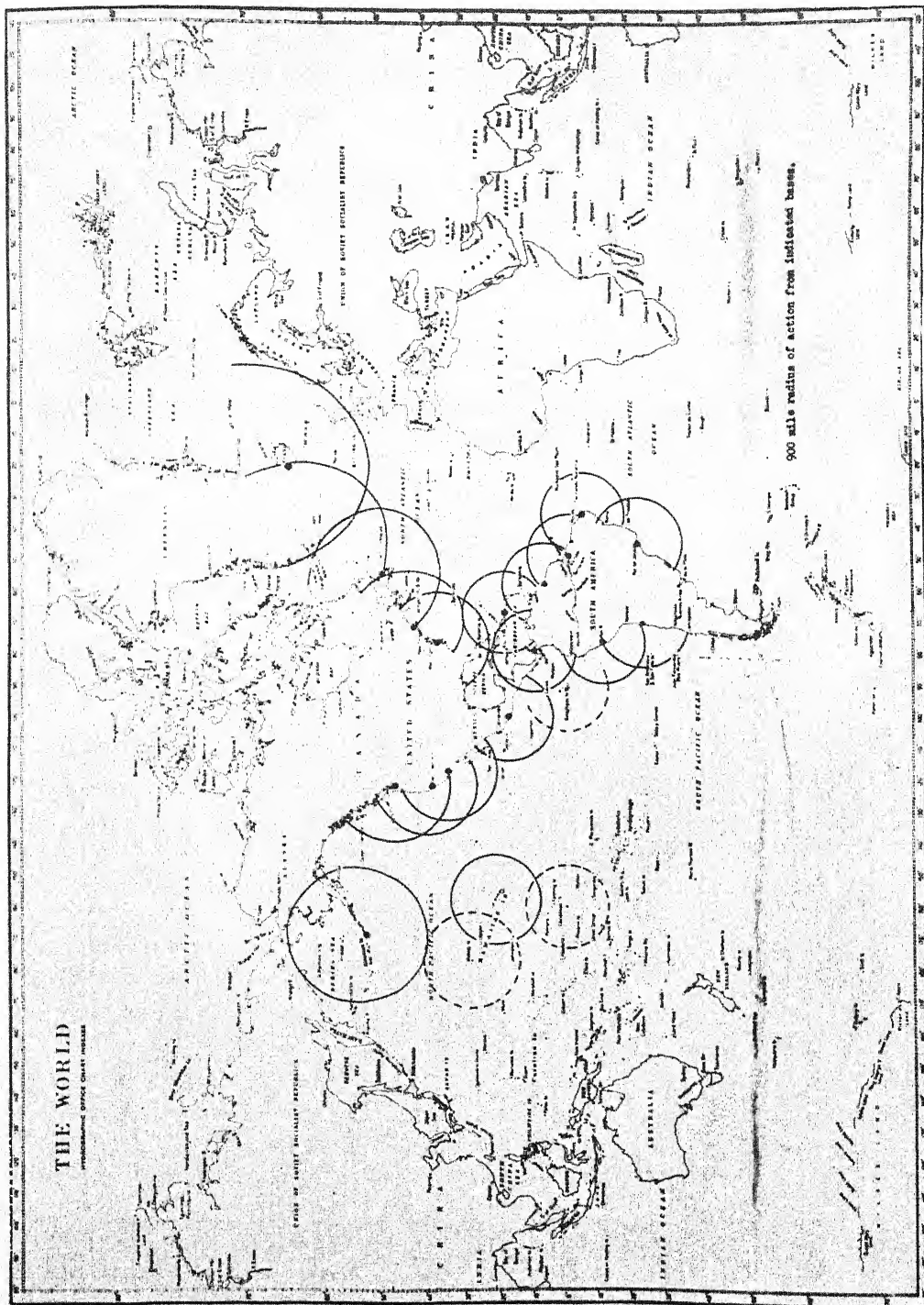
The decision was not an easy one to make. It promised to retard further the limping 54-group program, considered our minimum requirement for defense. A narrow view, or one motivated by pessimism concerning England's chance of survival, might have suggested that we arm ourselves first, then extend aid. The situation in the Pacific lent support to such an attitude. The policy actually followed, however, had been described in the President's "Arsenal of Democracy" radio address of 29 December 1940: "As planes . . . are produced, your Government, with its defense experts, can then determine how best to use them to defend this hemisphere. The decision as to how much shall be sent abroad and how much shall remain at home must be made on the basis of our over-all military necessities."¹⁰¹ The only satisfactory solution lay in the increased production recommended in ABC-2. New estimates, submitted in May by the War Plans Division of the General Staff to satisfy the contingencies anticipated in ABC-2, called for 4,200 planes a month for the AAF and the British, 800 for the U.S. Navy.¹⁰² This would total 60,000 aircraft a year, some 10,000 more than the President's goal which was far from being realized. Nevertheless, a new long-term objective and a new principle of collaboration in satisfying munitions requirements were soon to be projected.

On 9 July 1941, President Roosevelt requested the secretaries of War and the Navy to prepare for him an estimate of "over-all production requirements required to defeat our potential enemies," on the basis of which the Office of Production Management could relate our military needs to the practical realities of production facilities. In compliance, the secretaries presented on 11 September a Joint Board Estimate of United States Over-All Production Requirements. The section dealing with Army air needs had been prepared by the newly created Air War Plans Division, in a document known as AWPDP/1. The estimate of forces required for accomplishing the AAF mission was based on a plan to develop first an interim air force with models now in production or in advanced stages of development, and eventually, by 1944, to produce a force including an experimental bomber with a 4,000-mile radius. Requirements included: trainers, 37,051; tactical planes, interim force, 22,676; tactical planes, ultimate force,

26,416; monthly replacements, 2,276. Current procurement schedules used in these estimates listed as on order or on approved programs 72,183 military aircraft, of which 43,320 were for the AAF, 9,457 for Army defense aid (mostly for Britain), and 8,395 for direct British contracts. To attain its own goal of approximately 60,000 planes, the AAF proposed to add to current schedules a fill-in program of 16,437 aircraft.¹⁰³

The huge forces recommended in AWPDP/1 reflected the offensive mission contemplated for the AAF in the new strategic plans. And just as those plans were based on combined Anglo-American operations, so also must plans for the vast munitions program be based on the needs of the two powers and on their combined production potential. Germany's attack on the U.S.S.R. on 22 June gave England a most valuable ally, but Soviet munitions requirements added to the problems of allocation. Preliminary negotiations with a Soviet military mission began in Washington in early August, and the U.S.S.R. was promised among other items forty P-40's and five B-25's.¹⁰⁴ In September a combined Anglo-American mission with full powers to formulate a long-term supply program departed for Moscow. The American delegates, en route, stopped over at London and there, with the British War Cabinet and the U.S. special observers, investigated the possibilities of the proposed combined munitions program.

The British had prepared, at the instigation of President Roosevelt, an estimate of munitions requirements similar to that submitted by the Joint Board on 11 September.¹⁰⁵ From the information thus provided, the President hoped to have formulated a Victory Program for the creation of a huge pool of weapons for the common service of nations opposing the Axis. Between 17 and 20 September, the British and American estimates were examined jointly. Aircraft requirements listed in AWPDP/1 were accepted tentatively, subject to deletion of ten medium bombardment and twelve pursuit groups for which designated bases could not be provided. British requirements amounted to 49,385 planes, including first-line strength and wastage for the RAF and the Fleet Air Arm, but not trainers or strategic reserve. Of these, the British calculated they could build 35,832 by July 1943, leaving a deficit of 13,553 to be made up by the United States.¹⁰⁶ It was decided in the London conference that the estimates of Soviet needs, when obtained, should be added to these figures and that the resulting totals,



less expected British production, should be referred to the Office of Production Management. British and U.S. military authorities in Washington should then suggest any modifications required by the realities of production potentials and fix the relative priorities of the various types of munitions.¹⁰⁷

The Anglo-American mission, proceeding to Moscow, met with Stalin and his staff. On 1 October 1941, the first Soviet protocol was signed by Mr. W.A. Harriman, Lord Beaverbrook, and Foreign Commissar Vyacheslav Molotov. The United States and Great Britain each agreed to furnish the Soviet Air Force, in the period ending 30 June 1942, with 1,800 aircraft.¹⁰⁸ The U.S. mission had included a number of air officers competent to offer technical advice, but details of the air section of the protocol were elaborated later in the month in Washington by General Arnold and Capt. H.H. Balfour, British Under Secretary of State for Air.¹⁰⁹ According to the London agreement, information concerning Soviet needs should have allowed the rapid completion of plans for the so-called Victory Program. There was hardly time in the crowded weeks before Pearl Harbor to co-ordinate the several estimates with industrial potentials, but those estimates were to form the basis of the Victory Program drawn up in the early days of the war.

Future plans were of small help to the AAF in meeting current needs, now rendered most urgent by growing pessimism over the situation in the Pacific. Hence the task of maintaining firm and equitable commitments for short-term allocation of aircraft became progressively more difficult. At the Roosevelt-Churchill conference at sea in mid-August, Generals Marshall and Arnold had made agreements with the British concerning the number of AAF airplanes to be made available through lend-lease.¹¹⁰ On 9 September, General Arnold's staff produced a new plan, AWPDP/2, to cover the period 1 October 1941-30 June 1942. AWPDP/2 recommended that the proposed anti-Axis pool receive all aircraft produced under defense aid, all British and other foreign contract planes, and 15 per cent of combat types built for the AAF. Out of an estimated total of 14,802 tactical planes, this would give the pool 9,708 (66 per cent) and the AAF 5,094 (34 per cent). This figure was considered the minimum defense requirement of the AAF; when it had been reached, 30 per cent of the AAF's orders might be diverted for foreign needs. The pool should be divided according to some such ratio as follows: British Common-

wealth, 50 per cent; U.S.S.R., 30 per cent; China, 10 per cent; other nations, 10 per cent.¹¹¹

President Roosevelt, anxious that as many planes as possible be sent to the British, requested from the Secretary of War an estimate of the number of aircraft, by types, which could be provided the British during each remaining month of the fiscal year. As a basis for calculation, he suggested maintaining the existing agreement until 31 December, thereafter allotting to the British 50 per cent of the total monthly production until 30 June 1942. The estimates which Mr. Stimson presented, following air staff figures, allowed for more than 50 per cent export in some types; but he strongly urged that until minimum defense requirements were met, we reserve heavy bomber production for the AAF. The President agreed that Hawaii and the Philippines should receive their allotted heavy bomber groups but hoped to get some B-17's or B-24's for England after February 1942.¹¹²

Meanwhile another proposed allocation scheme had been prepared in London by representatives of the U.S. and British staffs. Known informally as the Slessor Agreement, this plan called for a severe curtailment of the 54-group program to a total of 3,516 tactical planes. Production thus released should be made available to the British until such time as the United States might enter the war, when capacity should be divided as the situation demanded.¹¹³ Subsequent discussion tentatively raised the allotment to the AAF by 25 per cent, to 4,395 planes, but even this figure was unsatisfactory to the Air Staff. Apparently the Slessor plan was not approved, and as a practical compromise, AWPD/2 was revised to take cognizance of the most recent production figures and the latest commitments to the U.S.S.R.¹¹⁴ Approved by the Chief of Staff and promulgated by General Arnold on 29 October as a "basis for establishing priorities for the allocation of aircraft," this schedule made available to the AAF 4,189 tactical planes, 6,634 to Great Britain, 1,835 to the Soviet Union, 407 to China, and 109 to other nations. On 3 December, the War Department set up a rule of thumb to guide lend-lease allocations, ground and air alike. The Soviet protocol was to be maintained as a minimum, with increased supplies being sent as soon as possible. Lend-lease materiel was, in the absence of other qualifying factors, to be divided thus: 40 per cent to the United Kingdom; 40 per cent to the U.S.S.R.; 10 per cent to China; 10 per cent to other powers. Where there were no other com-

mitments, supplies were to be divided equally between the British and the Soviets.¹¹⁵

Whether stated in specific terms or in percentage, the import of these schedules was the same. On the very eve of war the AAF was working under an allocation system which made impossible the early achievement of its 54-group program. The principle which since summer of 1940 had favored aid to the Allies over the needs of our own air arm was clear enough; as the Slessor Agreement put it, allocations of air materiel to the using services should be governed by their respective abilities to "absorb it usefully." Obviously the most useful employment of a weapon is in combat, and in the broad view the policy seemed justified by the time it afforded us. Perhaps the policy might have been modified had it been realized earlier that war would come in 1941; efforts to increase heavy bombardment strength in the Pacific seem to suggest this. Much of the AAF's loss to foreign services was in "futures," but actual diversions and the difficulty of systematic development in the face of constantly fluctuating allotments help explain its far-from-perfect preparedness on M-day. War was to bring no easy solution to the problems of aid to the Allies, but it was to bring a sharp revision in aircraft allocation schedules.

Strategic Plans

Not least important of our defense measures was the formulation of strategic and operational plans. This activity was intimately associated with the other phases of our preparations for war, and like them was profoundly influenced by events in Europe and Asia. Again the summer of 1940 may be viewed as a turning point in our national policies. Before that season the U.S. service staffs had been at work on a number of alternative plans, each based on a different set of contingencies. The planners were concerned only with the mission of the U.S. Army and Navy, but they had to assume potential allies as well as potential enemies. Until the spring of 1940, we could be confident that in a war against the Axis we would enjoy powerful support from the British and French; after Dunkirk, the prospect was less sanguine. Germany and Italy controlled, as conquered territory or as satellite states, much of Europe; Spain was friendly to the Axis, the U.S.S.R. bound by nonaggression treaties. The Tripartite Pact, signed at Berlin on 27 September 1940, which brought Japan into the Axis gave official notice of an alliance already suspected. In view of the collapse of

France and the apparent vulnerability of England, realism demanded that the American staffs lay plans for a war in which we might face a hostile world alone except for the help of Canada and Latin America.

It was this danger which had led our administration to lend material aid to Great Britain and to undertake with that nation mutual measures for defense of the Western Hemisphere. Simultaneously there was a growing *rapprochement* between the military establishments of the two powers, manifested in an exchange of military intelligence and more significantly in new war plans, jointly conceived by American and British officers. Begun in 1940, these plans were perfected in the following year. There was nothing novel in the fact that the war plans divisions of the U.S. armed services should be, in peace, preparing for war. But the plans drafted in 1941 went beyond the academic exercises of earlier years. Assuming a military co-operation with Britain and other nations already at war with the Axis, the planners worked in close and frequent co-ordination with the British staffs. For obvious security reasons, the mutual plans were not treated so frankly as were other preparations for the war which seemed imminent, though in 1941 occasional public statements by the President and the Prime Minister and less intentional disclosures through leaks to the press gave some indication of the close rapport between the military leaders of the two nations. Political opponents of the administration were proclaiming the existence of "secret agreements," but at the staff level, at least, there was due regard for legal limitations: no military alliances were made which would commit the United States to war; the plans only recited what should be done "if" this country should enter the conflict. In the nature of their task, the planners were not so stringently bound by the time factor as were those responsible for other defense measures. And so though strategic planning was carried on, as it were, in the subjunctive mood, the broad pattern of military strategy evolved in 1941 was to serve after Pearl Harbor without radical modification as a workable basis for Anglo-American collaboration.

The first systematic statement of common strategic principles was arrived at early in 1941. A series of conversations, beginning on 29 January, was held in Washington between a U.S. staff committee and a delegation representing the British chiefs of staff. The final report which they submitted on 27 March is usually known by its short title, ABC-1.¹¹⁶ The purposes of the conversations, as outlined in the directive, were: to determine the best means whereby the United States and

the British Commonwealth might defeat Germany and her allies "should the United States be compelled to resort to war"; to co-ordinate broadly plans for employment of forces, and to reach agreements for military co-operation, including the delineation of areas of responsibility, the principles of command, and the forces to be involved. In respect to materiel, the planners agreed that the United States would continue aid to Britain and other Axis opponents, reserving such supplies as were necessary for the United States and its associates.

Basic to all military considerations was the assumption that an American war with Germany would involve Italy certainly and probably Japan. Strategy then had to be conceived on a world-wide pattern. Within this framework, defensive policies stemmed from the fact that the great sources of strength of the associated powers—in manpower and productive capacity—were located in the United States and in England. Hence the United States must deploy its forces so as to insure the absolute security of the Western Hemisphere, while the chief concern of the British should be for the United Kingdom. To preserve also the ultimate safety of the British Commonwealth, it would be necessary to maintain a strong position in the Near East, India, and the Far East. Sea communications, upon which logistical support of these widely scattered regions depended, must be the concern of both powers.

Offensive strategy was based on the belief that since Germany was the predominant member of the Axis, "the Atlantic and European area is considered to be the decisive theatre." Hence the main United States (and British) effort was to be exerted in that theater, and operations elsewhere would be conducted in such fashion as would facilitate that effort. Accordingly, the United States would not increase its existing military strength in the Far East, but would depend largely on the U.S. Pacific Fleet to weaken Japanese economy and indirectly to support the Malay barrier by diverting Japanese strength from Malaysia.

The long-term pattern of offensive action against Germany was described. Measures were to include: economic pressure by blockade and other means; "a sustained air offensive against German Military Power, supplemented by air offensives against other regions under enemy control which contribute to that power"; early elimination of Italy; raids and minor offensives against the continent; support of all neutrals and belligerents who opposed the Axis; the build-up of forces

for an eventual land offensive against Germany; and capture of positions from which eventually the offensive could be launched.

The mission of the several services was described in most general terms. In respect to aviation, it would be the policy of the associated powers to achieve as rapidly as possible "superiority of air strength over that of the enemy, particularly in long-range striking forces." The Air Corps was to support ground and naval forces in defense of the Western Hemisphere and of U.S. overseas possessions and bases, and in operations in the Atlantic area. Of special significance, "U.S. Army air bombardment units [would] operate offensively in collaboration with the Royal Air Force, primarily against German Military Power at its source."

To insure sound direction of the united effort, two principles of command were accepted: unity of command within each theater and integrity of national forces. The danger zones of the world were divided into "areas" and the United States or Britain was charged with the strategic direction of all forces of the associated powers operating within each of those areas. Forces of either power operating under strategic direction of the other were not to be distributed in detail or attached to the ally's units, but were normally to function as organized task forces performing specific missions. In joint tactical operations, that officer of either power who was senior in rank or grade would command.

The allocation of areas of responsibility was dictated largely by the predominant interests of the respective powers—that is, the eastern Atlantic, the Mediterranean, and Near East areas went to the British, the western Atlantic and the Pacific to the United States. Arrangements for the Far East, in which the United States, Great Britain, and the Netherlands each had vital interests, did not conform to this general pattern. There, command of naval forces was divided between the commanders in chief of the British China Fleet and the U.S. Asiatic Fleet; army ground and air forces in each territory were to operate under their own commanders, with such co-ordination as might be effected in the theater.

An annex to the report ¹¹⁷ listed, by areas, the forces to be made available for deployment by both powers and the general mission therein of each of the services. Deployment estimates were not uniformly precise, being usually based on calculated strengths as of 1 April 1941, but in some cases being projected into the future. Air

Corps units, for instance, were figured on the basis of the incipient 54-group program. In harmony with the general strategy advocated, U.S. air forces in the Pacific and Far East were held to a minimum, with the bulk of the available units concentrated in the Western Hemisphere and the offensive striking force set up for the bombardment of Germany from English bases. For this task, it was estimated that thirty-two squadrons of bombers and pursuits could be sent in 1941, with a further strength to be added as resources allowed.

To insure an effective collaboration in the political and military direction of the war effort, the report recommended the exchange of military missions which would represent the chiefs of staff of the respective powers. Provisions should be made also for a joint planning staff, for a joint transport service, and for the prompt exchange of military intelligence.

In retrospect, ABC-1 appears as one of the most important military documents of the war. The staff committees, in drafting it, were careful to emphasize the obvious fact that tentative agreements reached therein constituted no political commitments, and that the acceptance of their recommendations for joint action if the United States should enter the war would require the approval both of their respective governments and chiefs of staff. When war did come, the over-all strategy adopted was, in spite of the crisis occasioned by initial Japanese successes, essentially that of ABC-1, and the joint machinery which was set up for co-ordinating Anglo-American endeavors was patterned on that suggested therein. And months before Pearl Harbor, the acceptance of ABC-1 by the U.S. chiefs of staff made it possible to utilize that report as the basis for more detailed logistical and operational planning.¹¹⁸

Since autumn of 1939, the War Plans Division of the General Staff had been working on five basic war plans for possible use against our potential enemies.¹¹⁹ Each plan, bearing the generic code name RAINBOW and its own numeral designation, assumed a different situation and course of action in regard to the Atlantic and Pacific areas. RAINBOW No. 5, which contemplated an offensive in the Atlantic-European areas and a strategic defense against Japan in the Pacific, fitted most accurately the strategy outlined in the United States-British staff conversations; consequently, that plan was developed in detail in the spring of 1941, and by the end of April the Joint Army and Navy Basic War Plan RAINBOW No. 5 had been

completed; the specific role of the Army was described in a War Department operations plan and a concentration plan.¹²⁰

Insofar as general concepts were concerned, RAINBOW No. 5 accepted all the major theses of ABC-1; that is, the assumptions, the over-all strategy, and the principles governing strategic direction and theater command were identical. In essence, RAINBOW No. 5 constituted a more detailed plan for the accomplishment of the tasks assigned to the United States in the staff conversations. For the Army, M-day would be designated only by direction of the Secretary of War, though certain tasks of a precautionary nature might precede M-day or any formal declaration of war.

The plan designated the coastal frontiers and defense commands to be activated on M-day within areas of U.S. strategic direction, and the areas to be occupied in Europe. For each command, the mission of the Army (including air forces) and the Navy was described, and a detailed breakdown was given, by specific units, of the forces allocated.

Most Army forces available for M-day were to be deployed either in Western Hemisphere defense commands or in the Hawaiian and Philippine coastal frontiers, with strictly defensive missions. The only exception was in the European theater, and even there, where the United States was to exert its principal effort, initial operations were to be preponderantly naval (protection of shipping) and aerial (bombardment of Germany). Hence the Army forces set up for early deployment in that theater were not large: pursuit units and ground forces for the defense of U.S. base areas in the United Kingdom and for relief of British troops in Iceland and Ireland; a token force (ground) to aid in defense of England; and the bombardment force for the air attack on Germany.

In addition to these forces assigned for deployment before or on M-day, both a strategic and a general reserve were established. It was understood that even for defensive purposes certain tactical offensives of a precautionary nature might be required—the President, for example, was publicly declaring our disinclination to allow Hitler to seize certain strategic spots in the Atlantic.¹²¹ Hence the strategic reserve was set up in increments with those tasks in mind: a 25 M Force (that is, a force to be brought into existence on M-day plus 25) to aid Marines in occupying Dakar or Freetown, or in defending the Azores, Cape Verde, or Canary Islands against possible Nazi aggres-

sion; a 45 M Force to prevent enemy seizure of the west coast of South America; a 90 M Force to serve in like fashion for northeast Brazil; and a 180 M Force to serve for the protection of other areas in Latin America or to prepare for the eventual offensive in Europe. The air units assigned to these forces were wholly inadequate by any standards, though some provision was made for reinforcement by units from the general reserve.

The general reserve included all Air Corps units not otherwise assigned, and the air mission included aid in defense of the Western Hemisphere, support of naval forces in maintaining sea communications, and attacks on enemy shipping within range. The Chief, AAF was to be charged with the organization, planning, training, and execution of active air defense measures for the continental United States, under War Department GHQ; and for preparation of plans, in conjunction with the commander concerned, for movement of air echelons of the several task forces.

RAINBOW No. 5 was approved by the Joint Board on 14 May and within three weeks by the secretaries of War and the Navy.¹²² During the next six months, no change was effected in the basic principles of the plan, but in view of developments in the international situation and in U.S. forces available, modifications in detail were necessary. On 19 November the Joint Board approved Revision No. 1 to the Basic Plan.¹²³ This provided for the reinforcement of air units in the Far East and for some changes in the command arrangements in that area, and it established a more substantial initial increment for the air force in the United Kingdom. Actually, the Air Staff had never approved of the method followed in RAINBOW No. 5.¹²⁴ The plan was based on an "M plus" time schedule which might have been satisfactory for mobilizing and committing an air force in being. But in view of the current inadequate strength of the AAF and the impossibility of predicting its status on an M-day which would probably be determined by the enemy, any but minimum commitments for air necessarily remained highly unrealistic.

Approval of RAINBOW No. 5 by the two secretaries confirmed the strategic principles advocated earlier in the staff conversations, but a discussion of the problems involved was reopened at the governmental level in mid-August at the Atlantic conference between the President and the Prime Minister. According to the President, plans for such a meeting had been under consideration as early as February—

that is, while lend-lease was being debated and while the staff conversations were in progress ¹²⁵—and they were brought to fruition in a conference on board HMS *Prince of Wales* in the Atlantic off Argentina, Newfoundland. The only official document published after the meeting, the so-called Atlantic Charter of 14 August, was political rather than military in nature.¹²⁶ The signators were frank enough in their denunciation of the "Hitlerite government" and in their faith in the "final destruction of the Nazi tyranny," and they made passing allusion to "steps which their countries are respectively taking for their safety" in the face of Nazi aggression. There was no overt reference to joint Anglo-American military operations, though there was pointed reference to the attendance of "high-ranking officers of their military, naval, and air services." The President on his return identified in a press conference the members of the U.S. delegation, which included the chiefs of staff, General Arnold, and the heads of the service war planning agencies.¹²⁷ Even in the absence of a fuller report on the conference it was obvious to any literate citizen that those officers had not boarded the *Prince of Wales* to discuss the Four Freedoms.

After the return of the President and his party, the problems of joint strategy were examined by the military staffs, both in discussion of ABC-1 and of a new review of general strategy presented in a paper by the three British chiefs of staff on 11 August.¹²⁸ This consisted of a concise appreciation of the current situation in the several areas of actual and threatened conflict and an analysis of present and future strategy; its outlook was, properly, British rather than joint.

Between the drafting of ABC-1 and the presentation of this review a new factor of extraordinary importance had occurred in the attack on the U.S.S.R. by Hitler. Initial German victories did not excite too much optimism for Soviet success, but Germany's preoccupation with a major eastern front at least precluded any chance of an invasion of England in 1941. Whether the new situation brought any radical change in British thinking or, indeed, whether the review was anything more than an elaboration of views expressed in ABC-1 is not clear, but to the U.S. chiefs of staff it seemed that the strategic summary now presented departed somewhat from the principles earlier agreed upon.

The British started with the familiar assumption that Germany was too strong to attack frontally without a preliminary undermining of

the foundations of the war machine and national morale. This they proposed to accomplish by blockade, subversive activities and propaganda, and aerial bombardment. The bomber offensive should be carried out on a scale far beyond any previous attempts—should be limited, in fact, only by the number of aircraft which could operate from United Kingdom airfields—and to that end the production of heavy bombers should be given highest priority once the needs of defensive security had been met. By concentrated bombardment of transportation centers and the industrial areas surrounding them, it was thought that cumulative efforts would seriously weaken the German ability and will to resist.

In fact, it seemed possible that these methods alone might induce Germany to sue for peace and that the role of the British army could be limited to that of an army of occupation. Nevertheless, a land army should be prepared to invade the continent and Germany itself. The British chiefs of staff did not envisage the use of the vast numbers of infantrymen used in 1914-18. Rather the invading force would be made up largely of armored divisions, which would in a war of movement liberate one area after another, turning each over in turn to local patriots who had been secretly armed in advance. The British were not willing to say this task could not be done without active American participation (though men like Wavell and Auchinleck were publicly saying just that),¹²⁹ but certainly the process would be accelerated if "the American bomber effort would increasingly swell the air offensive against Germany and in the final phase American armoured forces would participate."

Whatever the immediate reaction of the U.S. leaders may have been, their formal reply, requested by the British and submitted in a memorandum of 25 September,¹³⁰ indicates that they interpreted the review as diverging significantly from the strategy advocated in ABC-1 for the defeat of Germany. They professed an adherence to the list of offensive means prescribed by that document, whether America entered the war or not, and they felt that the objectives described in the review were lacking in precision. They gave an itemized comment, paragraph by paragraph, but their most important criticism was centered on two general points. First, they took exception to the bombing objectives, decrying the apparent emphasis on attack upon civilian morale. Second, they believed that too much faith was placed in the "probability of success solely through the employment of

bombing offensives," whereas "dependence cannot be placed on winning important wars by naval and air forces alone"; and that in consequence too little attention had been given to the build-up of large ground forces which would be needed completely to defeat the German war machine. In substance the Joint Board was not inclined to believe that American entrance into the war, with initial co-operation limited to air and naval action, would insure an early victory, and it was convinced that over-all strategy should adhere more closely to that described in ABC-1.

These comments were forwarded to the U.S. Army and Navy special observers at London for presentation to the British chiefs of staff.¹³¹ The memorandum was discussed in a meeting of the special observers and the British Joint Planning Staff on 21 November.¹³² The British felt that their review had been misunderstood, probably because its brevity had made impossible a clear delineation of their objectives. They gave a reasoned explanation of what they meant by morale bombardment and of their choice of target objectives. Their emphasis on the bomber offensive did not preclude a final land offensive; but they had been studying the problems of landing operations and had found many difficulties, and they expressed an interest in American views on the detailed aspects of such an operation.

The early outbreak of the war postponed the American reply, though the implied differences in outlook were to be debated on more than one occasion later. There was in the British concept of strategy perhaps no clear-cut break with the principles of ABC-1, rather a difference of emphasis, with the British showing a tendency to subordinate serious long-term planning for a large-scale invasion to more immediate and less direct modes of attack. But if the British dictum that it was "impossible to over-emphasize the importance of the bomber offensive as a part of our offensive strategy" was perhaps a stronger statement than the Joint Board could subscribe to, it was a point of view which could be regarded somewhat more sympathetically by the Air Staff. Actually, although both ABC-1 and RAINBOW No. 5 had scheduled the air attack from England as the earliest American offensive action, neither plan had contained any detailed statement of how that mission should be accomplished. Such a statement was given in an AAF plan drawn up just on the eve of the Atlantic conference, and in concept it did not differ greatly from the British point of view.

In an earlier context,* reference was made to the Joint Board Estimate of United States Over-All Production Requirements of 11 September 1941. President Roosevelt's request for the report had been motivated wholly by considerations of logistics. But the Joint Board had rightly deemed it impracticable to arrive at any realistic figures on forces and munitions needed for total war without a previous agreement as to national military policy. Consequently, the document when presented contained four parts: a report by the board on the strategy best calculated to defeat the enemy, and separate estimates by the Army, the Navy, and the Army Air Forces of their respective needs in personnel and materiel.

In its judgments concerning the enemy's capabilities and in its analysis of our own strategy, the Joint Board followed the general tenor of ABC-1. In spite of the entrance of the U.S.S.R. into the war, the board was convinced that Germany and her allies could not be defeated by the powers now resisting them. Hence to insure that defeat it would "be necessary for the United States to enter the war, and to employ a part of its armed forces in the Eastern Atlantic and in Europe or Africa." The services were not, however, in whole-hearted agreement as to how those forces should be applied. The U.S. Navy considered that "since the principal strength of the Associated Powers is at present in naval and air categories, the strategy which they should adopt should be based on the effective employment of these forces, and the employment of land forces in regions where Germany can not exert the full power of her land armies."¹³³ To fulfil its mission, the Navy asked for 1,100,000 men plus 150,000 for the Marine Corps and a fleet built around 32 battleships and 24 carriers.¹³⁴ The Army believed that "the foregoing strategy may not accomplish the defeat of Germany and that it may be necessary to come to grips with the German armies on the continent of Europe."¹³⁵ It was on the basis of this concept of strategy that the Army made its estimate of personnel (6,745,658 men, exclusive of the AAF) and materiel.¹³⁶

In respect to the proper strategy, the Army air arm took a position somewhat between these divergent views, but with decided implications of its own. The AAF entered a plea for 2,164,916 men and some 60,000 combat planes,¹³⁷ and to justify so large a request they presented an operational plan much fuller in detail and more elaborately

* See above, pp. 131-32.

supported by charts and tables than those of the older services. That the AAF made a separate report was most unusual; it was also highly significant.

Within the War Department, responsibility for giving effect to the President's directive, in respect both to the Army's ground and air arms, devolved upon the War Plans Division. Late in July, Lt. Col. Clayton L. Bissell, an air officer in that division, consulted with General Arnold on the best method of determining the Army's aviation needs. It was indicative of the temper of the AAF that, in spite of its limited autonomy under AR 95-5 of 20 June 1941,* a decision was reached to allow the newly formed Air War Plans Division to prepare the estimate independently as an Air Staff agency rather than as individuals subordinate to the General Staff's WPD. And AWPD was not as unprepared for the task as might be expected in view of its extreme youth. It included a number of officers, previously associated with the Air Corps Tactical School, who were deeply imbued with the potentialities of air power. One of these, Maj. Haywood S. Hansell, Jr., had accumulated target information in the intelligence section of the Office of the Chief of the Air Corps and had just returned from England with fresh data and a familiarity with RAF experience. Actual authorship of a military document is seldom known. A number of officers from the several staff agencies of the AAF, including the OCAC, contributed information which went into AWPD/1. But the document was put together by a committee consisting of Col. Harold L. George, division chief, Lt. Col. Kenneth N. Walker, and Maj. Laurence S. Kuter and Haywood S. Hansell, and apparently these airmen were chiefly responsible for the strategic concepts.¹³⁸

Work on the plan began on 4 August; completed on the 11th, it was accepted by G-3 after an oral presentation and drawn up in final form the following day. Subsequently it was approved by WPD, General Arnold, General Marshall, Mr. Lovett, and Mr. Stimson, and was included in the Joint Board's report of 11 September.¹³⁹ Perhaps its ready acceptance was partly due to the pressure of time in meeting the President's directive, for irrespective of the intrinsic merits of AWPD/1, the views expressed therein were not wholly consistent with those of the War Department. Tacitly, though not legally, the

* See above, p. 115.

AAF staff had assumed on this occasion a position of equality with those of the older arms.

The air planners, in framing AWPD/1, explicitly accepted the general principles of ABC-1 and the specific allocation of tasks in RAINBOW No. 5. Under these guides the Army air mission was conceived as entailing three tasks: to conduct air operations in defense of the Western Hemisphere; to assist in the strategic defense in the Pacific; and to wage an unremitting air offensive against Germany and lands occupied by its forces—including, if necessary, the support of a final invasion of the continent. The time schedule was somewhat complicated. The war was viewed as consisting of three phases: (1) the period until M-day, characterized by rapid expansion of forces and production, while measures short of war were being continued; (2) M-day until completion of preparations, characterized by a strategic defensive against Japan and a mounting weight of attack against Germany; and (3) the all-out attack on Europe. It was assumed that the air offensive in Europe could be initiated in April 1942, but that productive capacity and training would not support the all-out offensive until April 1944. Consequently allocation of air units was calculated in terms of an interim program and of an ultimate force which included aircraft models as yet in the early experimental stage.¹⁴⁰

To furnish air defense for the Western Hemisphere and for our overseas possessions, a force of twenty-three bombardment and thirty-one pursuit groups (each of the latter including three day and one night interceptor squadrons) was planned. These forces were designated for specific bases in the continental United States; in the Philippines, Hawaii, and Alaska; and in South America, the Caribbean, the Canal Zone, and the northeast area of North America. On the assumption that the air offensive against Germany would minimize danger of an attack from that direction, these forces were in general oriented toward Japan, and provision was made to transfer six pursuit groups to Europe for the final offensive.¹⁴¹

It is obvious that aircraft based in Alaska, Hawaii, and even on the West Coast would contribute toward the strategic defensive against Japan, and that beyond that the major responsibility would fall to the Navy. But because of the importance of the Philippines in light of the stiffening of U.S. policies in the Far East, it was proposed to add to the air forces in those islands one pursuit and two heavy

bomber groups, and eventually to base two groups of very long-range bombers in Alaska.

It is apparent, however, that the air planners were less interested in the problems of the defensive in the Americas or the Pacific than in the war in Europe. The basic feature of their plan lay "in the application of air power for the breakdown of the industrial and economic structure of Germany." This involved "the selection of a system of objectives vital to continued German war effort, and to the means of livelihood of the German people, and tenaciously *concentrating all bombing* toward destruction of those objectives." The objectives were predominantly precision targets, and it was not intended to resort to area bombing of civilian concentrations until German morale began to crack.¹⁴²

The main target objectives should be the electric power grid in Germany, the transportation network (rail, inland water, and highway), and the oil and petroleum industry—with final attacks on urban areas. It was accepted that this program might not be accomplished without some serious diversions. As an "intermediate objective" prerequisite to successful long-range bombardment operations, it would be necessary to neutralize the German Air Force by attacking its bases, the aircraft factories which nourished it, and the light metals industries upon which those factories depended. And to protect the security of bases and the sea lanes which connected them with American production centers, it might be necessary to attack submarine bases, surface craft, and "invasion" bases on the continent.¹⁴³

To calculate the force required to accomplish these missions, estimates were made as to the number of individual targets which must be destroyed to disrupt each of the target systems enumerated, as to the bomb weight required for each, as to the total bomb lift required according to computed coefficients of aiming errors under combat conditions, and finally, as to the number of planes required to deliver that total bomb load within the accepted time schedule.¹⁴⁴ The resultant requirements, in terms of tactical groups, were: medium bombers (B-25, B-26)—10; heavy bombers (B-17, B-24)—20; [very] heavy bombers (B-29, B-32)—24; VLR heavy bombers (4,000-mile-radius type)—44; in all, a total of 98 groups, with 6,834 aircraft. It was expected that these planes, other than the 4,000-mile-radius type, would be based in the United Kingdom and the Suez region; and that since the latter type would not be available before 1944, an interim

program utilizing duplicate bombardment crews for the other types should be initiated in 1943. For protection of the air bases, 10 pursuit groups were to be located in the United Kingdom, 6 in the Near East. To avoid overcongestion in those areas, the 4,000-mile-radius planes, when available, would be based elsewhere, as in Newfoundland, Greenland, Africa, or India.

The success of the whole program was predicated upon the ability of American bombers to conduct daylight missions far into Europe. In spite of earlier German and English experience, it was concluded that "by employing large numbers of aircraft with high speed, good defensive fire power, and high altitude," it would be feasible to make deep penetrations into Germany by day. But to guard against expected improvements in German fighter defense, it was suggested that experiments be begun immediately to develop a heavily armed and armored escort fighter with long-range capacity.¹⁴⁵

The planners considered it improbable that a large-scale invasion of Europe could be made before spring of 1944, which would coincide with the climax of the bomber attack, and they believed that "if the air offensive is successful, a land offensive may not be necessary." Complete victory through air power alone, however, could not be assured, and provision was made for close support of ground forces in that assault. The tactical air force should include 13 groups each of light bombers (A-20) and dive bombers, 2 photo reconnaissance groups, 108 observation squadrons, and 19 transport groups.¹⁴⁶ Pursuit units would include 5 groups set up as reserve for the British Isles and such of the interceptor units there as might be spared.

Separate provisions were included for aircraft for training and for the transport of air materiel.¹⁴⁷ Estimates were made for the requirement in pilots (103,482) and in total personnel (2,164,916),¹⁴⁸ and some general statements were given as to the methods of training.

The President in his directive had stated that he was "not suggesting a detailed report," but the air planners had, in effect, drawn up a blueprint for the approaching war. From the vantage point of the present it is easy to find flaws in this plan. Actual experience in the war showed that the forces allocated for strategic defense in the Pacific were inadequate, those for hemisphere defense too abundant. The qualified faith in the ability of air power alone to conquer Germany proved ungrounded, and the force scheduled for support of the invasion was weak in fighters. But viewed solely as a program for the

strategic bombardment of Germany, AWPDP/1 was on the whole a remarkable document. True, neither the B-29, B-32, or longer-range models were utilized, but in other major respects the pattern set in 1941 was sound. The timing was most accurate. The tactics advocated did prove feasible once the escort fighter was developed. The selection of target objectives was almost identical with that suggested by the postwar analysis of the United States Strategic Bombing Survey¹⁴⁹—which is to say that, if the analysis was well founded, the program suggested in 1941 was more realistic than that which was later followed.

The several plans which have been described and the meetings in which they were discussed were accorded a secret classification, but security was less than perfect. Newspaper versions of the President's confidential report to administration leaders on the Atlantic conference were followed in November by scattered references to the Victory Program which gave evidence of further leaks.¹⁵⁰ On 4 December, a summary of the Joint Board Estimate, with verbatim extracts, was published in the *Chicago Daily Tribune* and other newspapers. Congressional critics of the administration, on the very eve of Pearl Harbor, registered protest against this "secret war plan," now no more secret than any other item emblazoned in headlines and entombed in the *Congressional Record*. Regardless of the political issues with which these plans were involved, from the military point of view there is hardly room for debate. It was not an American tradition to enter a war with a carefully conceived strategic concept. For once, in this respect, the nation was prepared.

But as General Arnold later put it, "we had plans but not planes." AWPDP/1 could be rushed through in a week of frenzied work by a handful of staff officers; it would take a nation at arms several years to produce the aircraft and crews, the bases and technicians called for in the plan. In the summer of 1941, there seems to have been an impression among some of the military that war would not come until the following spring. In such case our preparations, still far from perfect, would have been more nearly adequate than they were when the Japanese struck suddenly on that Sunday morning in December. Yet in spite of the time element the defense measures which had been taken since the beginning of 1939 allowed us to absorb our initial losses and to begin, within less than a year, a limited offensive.

CHAPTER 5

* * * * *

DEPLOYMENT OF THE AAF ON THE EVE OF HOSTILITIES

DEPLOYMENT of the Army Air Forces in 1941 was determined by the broad character of the AAF mission and by the existence of threats to our national interests from both the east and the west. As a component of the Army, the AAF was charged with "the preparation for and the execution of air operations" in defense of continental United States and our overseas possessions, and with similar responsibility for "operations outside the United States and its possessions as required by the situation."¹ The comprehensive nature of this mission demanded under the circumstances of 1941 a wide dispersal of Army air units, and at the same time, an effective concentration of experienced personnel within our continental limits for the organization and development of a gigantic program of expansion. It is not surprising, therefore, that the establishment of priorities and the allocation of units proved to be especially difficult tasks.

The number of fully trained and equipped units was not enough to meet all demands, a state of affairs shared by the AAF with other branches of the Army.² At none of the overseas stations in 1941 was the local air contingent regarded as adequate—in strength, training, or equipment—to fulfil its mission; nor could any of them have been substantially reinforced except at grave cost to a training program which carried the chief hope of a prompt fulfilment of plans for a greatly expanded air force. But the AAF was rapidly gaining strength and there was reason to believe that achievement of the goals initially set was not too far distant. Moreover, if the AAF did not at the moment have all the units needed, it at least had a guide in parceling out its limited strength. As a result of the strategic plans discussed in

the preceding chapter, American air units were deployed in accordance with a larger scheme of action, which in the test of war would be proved essentially sound.

The Zone of the Interior

During the months just prior to active American participation in the war, the responsibilities and organization of air commands in the Zone of the Interior underwent several changes which were designed to improve the air defense of continental United States. According to accepted doctrines of Army air defense in 1940, the GHQ Air Force had two major combat functions: it was to operate as a striking force against enemy targets far beyond the range of other land-based weapons, and it was to provide the necessary close-in air defense of the most vulnerable and important points in the United States. The latter objective was not intended to include air protection of the entire continental coast line but was aimed at limiting the effectiveness of air attacks upon vital areas.³ Antiaircraft artillery forces likewise had definite responsibilities in the event of enemy air action against the United States. In the light of British experience, however, air defense appeared to be a very complicated matter, involving the use of highly accurate means of detection, the development of both active and passive defense measures, and the co-ordination of military and civilian agencies. The United States in 1940 possessed only a few elements essential to air defense; it had neither a system nor a single agency responsible for protection against air attacks. But by 7 December 1941 a series of tests in the United States and firsthand study of British experience had resulted in formation of plans for air defense of the continent, and the AAF had emerged as the military agency responsible for that defense.

A first step toward co-ordination of air defense was taken early in 1940 when the War Department created the Air Defense Command. Headed by Brig. Gen. James E. Chaney and located at Mitchel Field, N.Y., the command was primarily a planning agency, charged with development of a system of unified air defense for cities, vital industrial areas, continental bases, and armies in the field. Although limited in size to a staff of only ten officers, the command undertook to study the special capabilities of pursuit aviation, antiaircraft artillery, radio equipment, barrage balloons, and passive defense measures, and to formulate the most effective combination of the several means of

(Army Air Forces' Munitions Requirements to Defeat our Potential Enemies.)

STRATEGIC OBJECTIVE: To defeat Germany (and her Allies).

THE ARMY AIR FORCE TASK:

- 1. Destroy the industrial war making capacity of Germany.
- 2. Restrict Axis air operations.
- 3. Permit and support a final invasion of Germany.

ACTION NECESSARY TO ACCOMPLISH THE TASK:

- No. Selected Targets
 - 50
 - 47
 - 27
 - 18
 - 6
 - 154
- Results
- Disrupt electric power.
 - Disrupt transportation.
 - Destroy 80% synthetic petroleum.
 - Destroy airplane assembly plants.
 - Destroy 90% aluminum.
 - Destroy magnesium.
- 154 Total targets to destroy and keep destroyed to accomplish the task.

FORCE REQUIRED TO ACCOMPLISH THE TASK

The exact number of airplanes required to assure the complete destruction of these 154 selected targets has been determined by a detailed study of bombing accuracy in wartime operations including pursuit and anti-aircraft opposition. This approach and analysis has established the requirement that 6834 operating bombardment airplanes are required to accomplish the task during the six month period that weather conditions favor operations over Germany.

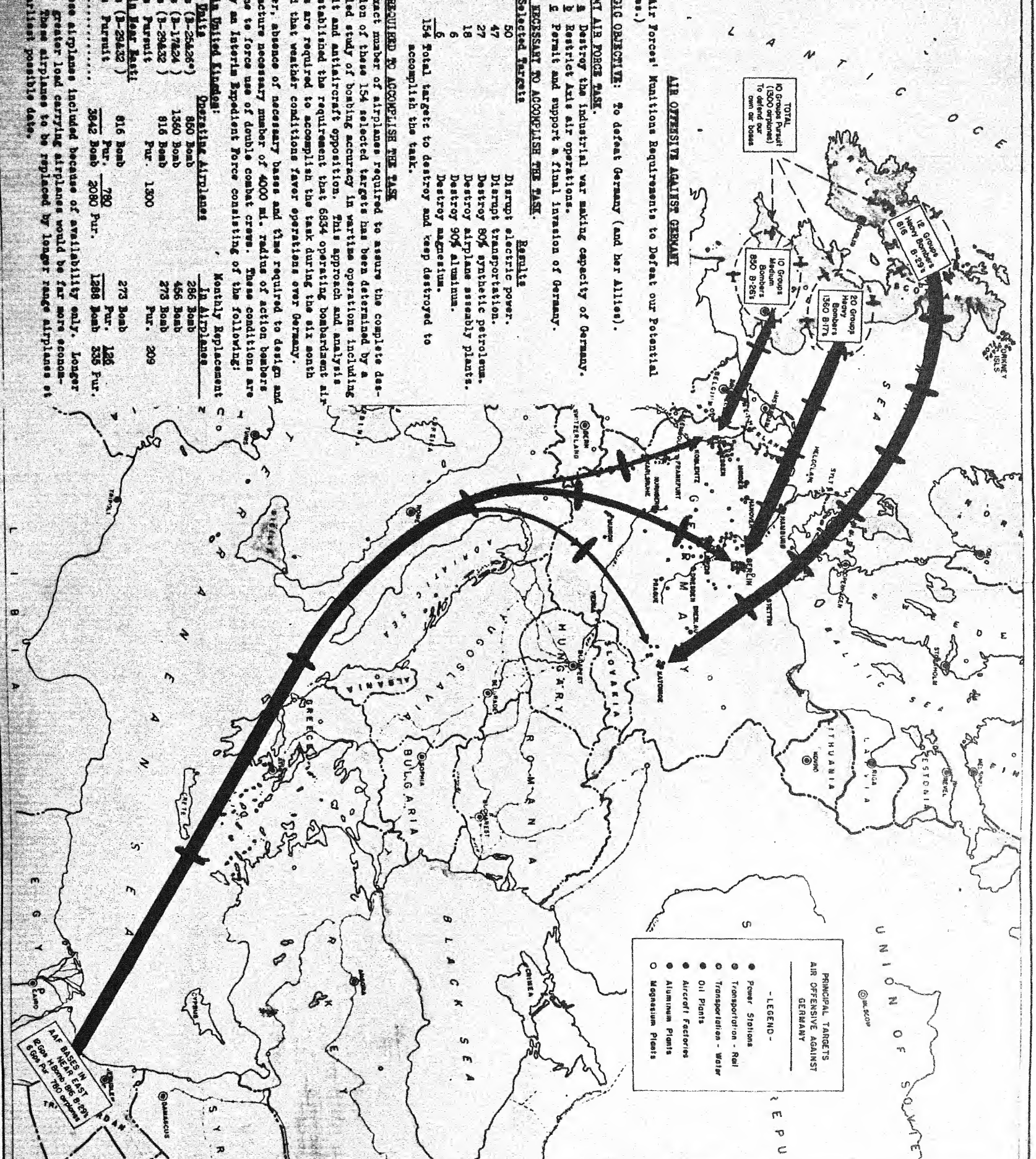
However, absence of necessary bases and time required to design and manufacture necessary number of 4000 mi. radius of action bombers combine to force use of double combat crews. These conditions are met by an interim expedient force consisting of the following:

Based in United Kingdom:

Date	Operating Airplanes	Monthly Replacement
10 Ops (B-26A36*)	850 Bomb	286 Bomb
20 Ops (B-17A24)	1360 Bomb	456 Bomb
12 Ops (B-29A32)	816 Bomb	273 Bomb
10 Ops Pursuit	Pur. 1300	Pur. 209
Based in Near East:		
12 Ops (B-29A32)	816 Bomb	273 Bomb
6 Ops Pursuit	Pur. 780	Pur. 126
TOTAL	3842 Bomb 2080 Pur.	1288 Bomb 335 Pur.

* Base airplanes included because of availability only. Longer range, greater load carrying airplanes would be far more economical. These airplanes to be replaced by longer range airplanes at the earliest possible date.

AIR OFFENSIVE AGAINST GERMANY



PRINCIPAL TARGETS
AIR OFFENSIVE AGAINST GERMANY

- LEGEND -

- Power Stations
- Transportation - Rail
- Transportation - Water
- Oil Plants
- Aircraft Factories
- Aluminum Plants
- Magnesium Plants

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defense. Under a strict interpretation of air defense the new organization was not concerned with air striking units, which were designed to seek out and destroy hostile aviation great distances away, but was concerned only with the problem of protecting important areas and installations by interception and destruction of attacking enemy forces.⁴ Since the Air Defense Command was only a planning body, pursuit aviation remained under the jurisdiction of the GHQ Air Force.

In order to observe an air defense system in wartime operation, several groups of Army officers visited the British Isles in 1940 and returned with enthusiastic reports of the organization which was demonstrating its effectiveness against the Luftwaffe. By means of secretly developed radio detector instruments and a network of ground observers, the British had perfected a warning system which made possible the use of a ground, rather than an air, alert.⁵ Knowing accurately the altitude, speed, and course of approaching enemy formations, the British defending forces were able to keep their interceptor aircraft on the ground until the appropriate time for them to take off and engage the enemy. This method was far more efficient than the older procedure of operating continuous air patrols in the hope of discovering and intercepting hostile aircraft. Studies already made in the United States had indicated the important function of radio detector devices in air defense, and the Signal Corps was making progress in development of the special equipment.⁶ Consequently, in May 1940 the War Department directed that commanders of armies and overseas departments prepare or revise plans for an aircraft warning service which would include provision for use of detectors.⁷

The necessity for new radio equipment having been established, the Air Defense Command drew up detailed plans for a typical aircraft warning service with its three essentials: radar stations, a ground observer system, and filter and information centers. Procedures for the service were worked out in a test sector in the northeastern part of the United States, and methods were devised for co-ordinating the aircraft warning system, antiaircraft artillery, and interceptor aviation. It appeared, as a result of initial studies, that the organization for air defense of the United States should be based upon "strategic air areas" rather than upon a single command agency or upon any existing territorial divisions such as army or corps areas.⁸ Other factors in 1940 were working toward establishment of air areas in the United States;

because of the increasingly heavy responsibilities of the GHQ Air Force a decision was made to decentralize its training and tactical control, and accordingly four air districts were activated in January 1941 and the air units were assigned to these districts.⁹

Prolonged discussion of the assignment of the air defense mission terminated in a series of decisions announced in the spring of 1941. In March the entire responsibility for continental air defense for the first time was vested in one agency, the GHQ Air Force. At the same time the War Department established four strategic areas in the United States. Designated as the Northeastern, Central, Southern, and Western Defense Commands, the new agencies were to plan for complete, as opposed to solely air, defense of the areas. The existing air districts were redesignated as the First, Second, Third, and Fourth Air Forces, and to them, respectively, was delegated responsibility for air defense planning and organization along the eastern seaboard, in the northwestern and western mountain areas, in the southeastern area, and along the west coast and in the southwest. The areas assigned to the air forces were not entirely coterminous with the areas of the new Army defense commands. Adopting methods and procedures which had been developed by the Air Defense Command, the air forces organized interceptor commands which studied the air defense needs of their respective areas and established the foundation for aircraft warning systems with the widespread enlistment and training of civilian volunteers.¹⁰

For several reasons, the air defense of the United States was still incomplete on 7 December 1941.* There was a critical shortage of both radio equipment and aircraft of all kinds; the four air forces were charged with the training of combat units as well as providing continental air defense, and the dual responsibilities were more than could be discharged in view of the current shortages of experienced personnel and materiel. Nevertheless, significant advances had been made in the concept of a unified air defense and in the strategic area approach to the problem: large-scale Army maneuvers had tested the methods of air defense under simulated wartime conditions; plans had been made for civilian co-operation in air raid protection of large cities and other likely objects of enemy attack; and provisions had been made for a number of observation posts and filter and information centers. The preparations were not elaborate, for joint Army

* See Chap. 8.

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and Navy estimates did not visualize large-scale attacks on either the Atlantic or the Pacific coast in the initial stage of enemy operations. Carrier attacks and other types of unsustained assault were regarded as possible, and defensive preparations were made on the assumption that the exact locality of such attacks could not be foreseen and that priorities for protection of vital areas could be assigned only in the most general terms.¹¹ The primary emphasis in American defense during 1941 was therefore on reinforcement of overseas bases, for so long as these were held, the likelihood of a serious attack upon continental United States was considered to be slight.

The reorganization of air commands and readjustment of responsibilities in the Zone of the Interior during the months prior to hostilities provided a model for overseas commands. Because of the integration of Army air units, both service and combat, into the AAF and the organization of the four air forces and their bases into the Air Force Combat Command in June 1941, the Army air arm by the following December was structurally well suited to the performance of its defense mission on the continent. Likewise of importance, the several air functions had been clarified and delineated in the organization of bomber, interceptor, air base, and air support commands within the several air forces. Overseas air units, although under the jurisdiction of local department commanders, reflected these continental concepts of organization and responsibility.

The North Atlantic

Army air units in Newfoundland, Greenland, and Iceland were few in number and small in size, but they were scheduled to be reinforced as rapidly as trained units became available in the United States. A large part of the activity in the North Atlantic was concerned with establishment and improvement of installations needed along the air route to Great Britain.* In an attempt to complete a network before winter began to close in, small detachments of Army airmen were rushing their work on communications and weather stations in Labrador, Baffin Island, Newfoundland, Greenland, and Iceland. By December 1941 ten stations, composing the skeleton of the Army's first airways communications system outside the continent, extended in a thin line across the North Atlantic to the British Isles.¹² Defense of these vital installations was a part of the mission of Army air units

* See maps, pp. 315, 642.

in the North Atlantic, but the total mission was much more comprehensive and the means of accomplishment were dangerously inadequate. The First Air Force, with headquarters at Mitchel Field, New York, was acting as a major source of supply in the initial garrisoning and defense of North Atlantic bases. To the normal responsibilities of the I Interceptor Command was added the task of planning for the air defense of Nova Scotia and Newfoundland; detector sites were selected in co-operation with Canadian authorities, and representatives of the two nations worked toward a standardization of aircraft warning procedures in the area.¹³

The first movement of U.S. troops into Newfoundland occurred in January 1941 when a garrison arrived at St. John's to form the nucleus of the Newfoundland Base Command.¹⁴ The command was ordered to defend U.S. military and naval installations in Newfoundland, to co-operate with Canadian and British forces defending Newfoundland and Canadian coastal zones, to support U.S. naval forces, and within prescribed boundaries to destroy any German and Italian naval, air, and ground forces encountered.¹⁵ Command difficulties arising from the presence of several nationalities at first hampered American forces in accomplishment of their mission; but unity of command for all forces on the island, which might have alleviated the difficulties, was obviously impossible so long as Canada was at war and the United States was not.

Initial plans for Army air garrisons called for a composite group,* numbering 263 officers and 2,842 enlisted men, to be stationed at the Newfoundland Airport at Gander Lake, but only one squadron had reached the station by the end of November 1941. A pursuit squadron was scheduled to be stationed at Argentia, site of a U.S. naval base on Placentia Bay, while Army airways detachments were planned for St. John's airport on the eastern coast and for Harmon Field, Stephenville, in the western part of the island. In May 1941, the First Air Force sent the 21st Reconnaissance Squadron, equipped with six B-18's, to the Newfoundland Airport, and in the following month eleven transport planes were allotted to the base command for moving supplies and men to the island. In August, when a few heavy bombers became available for transfer to Newfoundland, the 41st Reconnaissance Squadron replaced the 21st Squadron, and the defending air

* A composite group was made up of squadrons equipped with different types of planes.

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force was then composed of 8 B-17B's, 53 officers, and 449 enlisted men, plus an air base squadron.¹⁶ Under the guidance of Maj. Gen. Gerald C. Brant, Army commander in Newfoundland, policies on joint operations were arranged for the new B-17's and for B-18's operated by Royal Canadian Air Force units stationed at the Newfoundland Airport. Air operations were confined largely to reconnaissance, but occasional attacks were made against German submarines which approached the island shores.¹⁷ An increase in submarine activity in November brought a request from the Navy for more Army air units at the Newfoundland Airport in order to afford greater protection for Allied shipping and to insure the safety of essential sea communications.¹⁸ By the first week of December 1941 the 49th Bombardment Squadron, with nine B-17B's, was preparing to depart from the United States for Newfoundland, and the AAF was attempting to obtain a small supply of depth bombs which were needed for attacks on submarines.¹⁹

Air defense preparations in Greenland were not so far advanced as those in Newfoundland. Surveys which were made during the spring and summer of 1941 had failed to disclose any site suitable for an airfield on the eastern coast, but a promising site was found on the southern tip of the island at Narsarssuak, about thirty-five miles northeast of Julianehaab.²⁰ In west Greenland a suitable location for a staging field was found in the Holstensborg district, and top priority was given to the building of runways and air base facilities in order to speed delivery of aircraft to Great Britain.²¹ Plans were made to develop the Narsarssuak site into a major air base as rapidly as possible, the Secretary of War having directed in the spring that establishment of a Greenland air base be accelerated.²² Proposed sites for other military installations were investigated during the fall of 1941 by Col. Benjamin F. Giles, an Air Corps officer who had been designated to head the Greenland Base Command.²³ The planned Army air garrisons for Greenland, approved by the War Department in October, comprised one heavy bombardment squadron, one interceptor pursuit squadron, an air base squadron, weather and communications detachments, and air service units totaling 921 officers and men.²⁴ Only a few weather, communications, and aviation engineering troops had arrived by December 1941; tactical squadrons could not be sent until construction of airfields and housing had been completed. Two stations in the Army airways communications system were in operation

in Greenland by this time, and two companies of aviation engineers were hurriedly constructing the facilities necessary for air defense of Greenland.²⁵

American defense preparations in Iceland were accorded a degree of urgency not given to those in Greenland, even though more than 25,000 British troops were protecting the island. On 5 July 1941 President Roosevelt, in oral orders to the Army Chief of Staff and the Chief of Naval Operations, directed that one Army pursuit squadron with the necessary maintenance and administrative detachments be sent to Iceland as soon as practicable. The 33d Pursuit Squadron was immediately prepared for shipment, and on 25 July the air echelon, with thirty P-40's and three primary training planes, boarded the carrier *Wasp* at Norfolk, Virginia. Two days later an air base squadron sailed from New York for Iceland, and American planes shortly were operating from the Reykjavik airdrome in southwestern Iceland. The air service contingent was augmented in November by 21 officers and 336 enlisted men from the First Air Force, comprising ordnance, weather, aircraft warning, and materiel units.²⁶ American ground forces were also arriving in Iceland, but complete relief of British forces was not expected to be accomplished before May 1942; until that time the defense of Iceland was the joint responsibility of all air, ground, and naval forces stationed there.

Prior to the outbreak of hostilities in December 1941, American forces in Iceland were operating under orders which stipulated that the approach of any Axis forces to within fifty miles of the island would be deemed "conclusive evidence of hostile intent" and would justify attack by the American defenders. The mission of Army aviation, operating under the Iceland Base commander, included independent action against sea, land, and air objectives, support of land and naval forces in offensive and defensive operations, aerial reconnaissance and photographic operations, and transportation of supplies and personnel. The 33d Pursuit Squadron was of course incapable of carrying out all phases of the mission, and plans were being made for shipment of a bombardment squadron, an observation squadron, and an additional pursuit squadron.²⁷

Reinforcement was delayed both by the shortage of trained squadrons in the United States and by the lack of proper aviation facilities in Iceland. British forces had prepared two airfields for limited operations and had formed a coastal observation network of thirty-nine

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posts, all provided with telephone communications. But new airfields, improvements in existing airfields, and large quantities of aircraft warning equipment were required to complete the basic defense of the island. For stations not immediately adjacent to seaports, the supply problem was extremely difficult; there were no railroads, and many roads were closed during the winter. Utilities such as electric power and water were not available in sufficient quantities to supply the needs of the armed forces. In spite of the necessarily slow development of facilities, the first Army air units gained valuable experience in operating with the Royal Air Force at the Reykjavik and Kaldadarnes airdromes. An alert system was in use twenty-four hours a day, and air operations were carried out in accordance with procedures tested and established by the British during two years of war against the Axis.²⁸

In October, when weather conditions began to interfere seriously with the operation of Navy patrol bombers in Iceland, the Chief of the Army Air Forces directed that a heavy bombardment squadron and the necessary service troops be sent immediately to Iceland, prepared to operate in lieu of naval air forces in protection of shipping as well as to operate in defense of the island.²⁹ The decision represented a great concession on the part of the AAF, for at that time the Air Force Combat Command had a total of only thirty-four heavy bombers which were not earmarked for overseas stations and the transfer of eight planes to Iceland would have left only twenty-six heavy bombers in the United States. The proposed move was not made because of the poor condition of runways and the lack of base facilities in Iceland.³⁰ Transfer of a medium bombardment squadron, equipped with eighteen B-25B's, was being held up for the same reasons, and the first week in December found the AAF seeking approval of an extensive program of air base construction for Iceland. A study of the situation indicated the desirability of sending a complete heavy bombardment group to the island for operation against surface and undersea craft in conjunction with the Navy and for protection of shipping in the North Atlantic. There was likewise need for two medium bombardment squadrons to collaborate in the work, especially prior to development of facilities for heavy bombers. Addition of a pursuit group and construction of an air base on the east coast of the island were regarded as essential to thorough defense operations, for German aircraft at that time could fly without too much

risk over the greater part of Iceland.³¹ But despite the recognized need for Army air units at all North Atlantic bases, only token forces were deployed in the area by 7 December 1941.

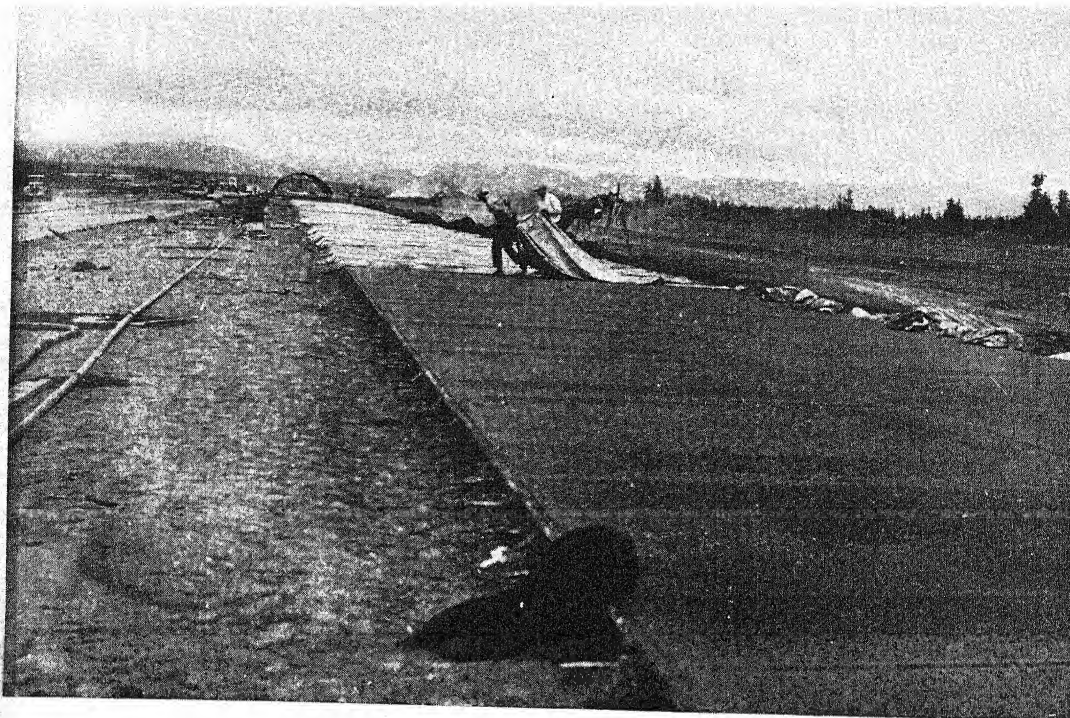
The Caribbean

The concept of far-flung air defense was receiving wide application in the Caribbean area, with new air bases, nests of antiaircraft guns, and aircraft warning outposts fringing the Caribbean Sea.* Distributed among the military fields and installations were 1,112 officers and 14,974 enlisted men of the AAF and approximately 137 pursuit planes, 77 bombers, 22 attack aircraft, and 9 observation planes. Combat effectiveness, however, was not assured by numerical strength, for a majority of the men were incompletely trained and most of the aircraft were obsolete. Partially trained forces were expected to complete their training while performing basic defense duties, but the shortage of modern aircraft and the necessity of erecting barracks and other base facilities acted as deterrents to the program. More significant than the number and status of troops deployed in the area were the broader aspects of air force organization and planning and the position of air units in relation to other forces in the Caribbean Defense Command. Under the guidance of Maj. Gen. Frank M. Andrews, the scattered Caribbean units had been welded into an integrated air force which was essentially a task force, complete within itself, capable of both independent and co-operative action, and commanded only by air officers.³²

The organization of the Caribbean Air Force represented a marked structural advance over the force which previously had been depended upon for the air defense of the Panama Canal. Although military aviation had been a part of canal defenses since 1917, until late in 1939 Army air units, then organized under the 19th Wing, had occupied a subsidiary position in the Panama Canal Department. During the early months of 1940 the whole subject of canal air defense was re-examined by the War Department, and with Air Corps expansion the 19th Wing developed into the Panama Canal Department Air Force, which in turn provided a nucleus for the Caribbean Air Force in the spring of 1941.

The capabilities of modern aircraft, as demonstrated in the European war, led American military commanders in the Canal Zone to

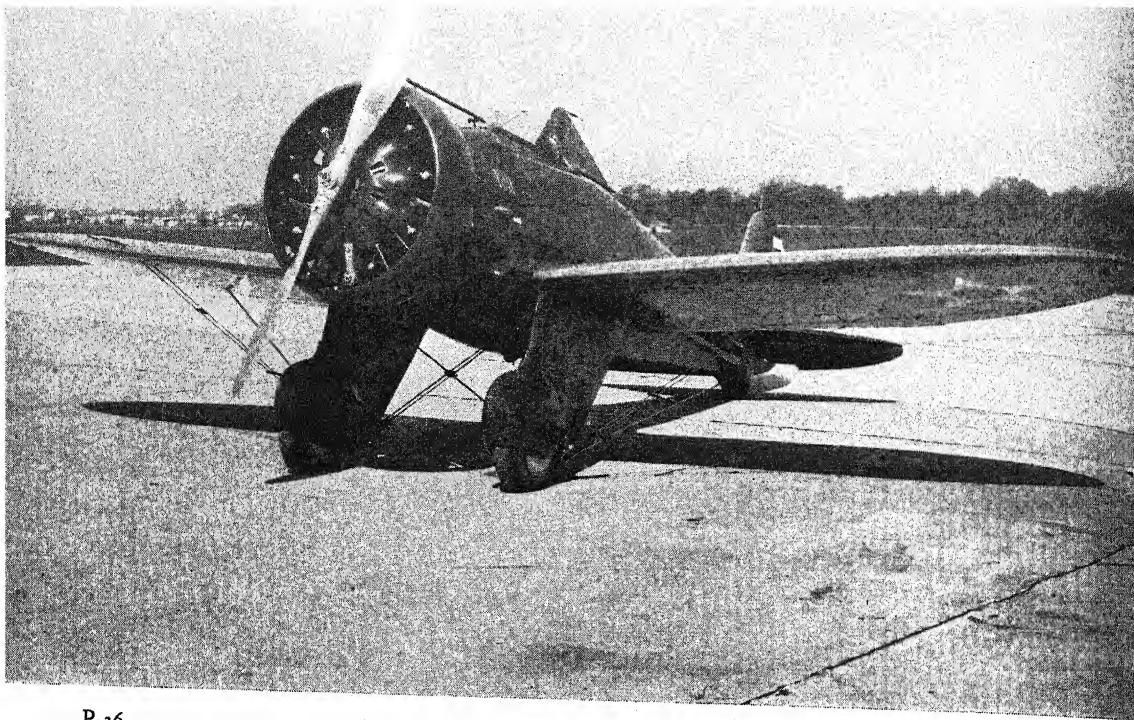
* See maps, pp. 300, 543.



CONSTRUCTION OF ALASKAN LANDING FIELD, AUGUST 1941

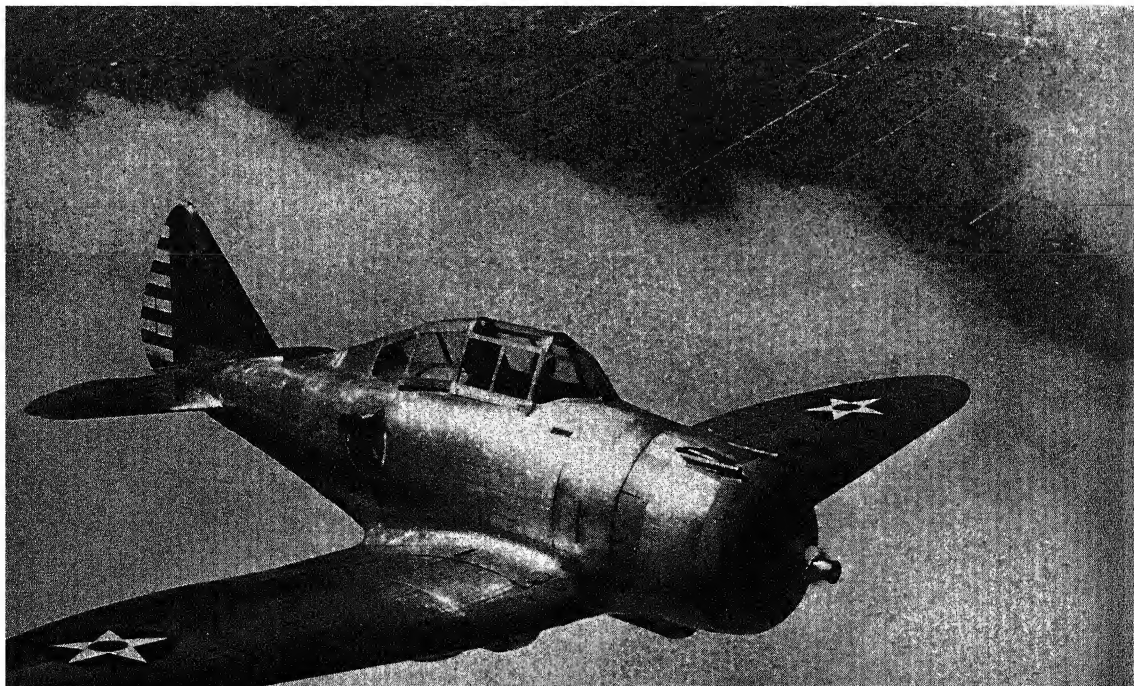
CONSTRUCTION AT A CAMP IN ICELAND, NOVEMBER





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the conclusion that an air assault on the locks and other vital installations would be the most likely form of attack by an enemy in the area. The importance of air defense was consequently heightened, although the mission of Army air forces in the Canal Zone remained unchanged. A Joint Board report in 1937 had specified the joint mission of Army and Navy forces in the Panama Canal Department as "protection of the Panama Canal in order that it may be maintained in continuous operating condition," obviously for passage of the fleet. The Army mission was to protect the canal against sabotage and against attacks by air, land, and sea forces, while the Navy mission was to support the Army in defending the canal and to protect shipping in the coastal zones. Local defense plans gave Army aviation the responsibility of air defense of the canal, with the understanding that naval patrol planes would carry out distant reconnaissance, patrolling, reporting, and tracking. The two major tasks of the Army air component consisted of furnishing an offensive or striking force to destroy enemy vessels encountered and of furnishing a defensive force to combat air attacks. Similar missions were assumed by other Army air contingents as bases were established throughout the Caribbean and by the Caribbean Air Force upon its activation in May 1941.³³

Of the several outlying sites in the eastern Caribbean, Puerto Rico presented the most advanced stage of development in air defenses by December 1941, primarily because preparations had begun early in 1939. The Air Corps had previously been unable to secure approval of an air base in Puerto Rico, for the War Department regarded such a development as purely a wartime measure. A site in the Punta Borinquen area was selected for a major air base, and seven sites were chosen for auxiliary airfields. In December 1939 the 27th Reconnaissance Squadron arrived from the United States to begin the air defense of Puerto Rico. One year later, approval had been granted for creation of a composite wing in Puerto Rico, to consist of an interceptor pursuit group, one heavy and one medium bombardment group, two air base groups, two reconnaissance squadrons, and one observation squadron. Cadres for some of the units were sent from the United States early in 1941, and by subdividing they furnished the skeleton forces needed for activation of other units. The 13th Composite Wing, under the command of Brig. Gen. Follett Bradley, became the initial unifying agency for military aviation in Puerto Rico, while a provisional air defense command was established to

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direct the operation of antiaircraft artillery, aircraft warning services, passive defense measures, and interceptor aviation. The last element was conspicuous by its absence throughout most of 1941, but the plan for unified air defense was keeping pace with developments in the Zone of the Interior. The aircraft strength of the 13th Wing by the end of April 1941, consisting of only three A-17's and twenty-one B-18A's, was not sufficient to meet either defense or training needs of the 27th Reconnaissance Squadron, the 25th Bombardment Group (H), and the 40th Bombardment Group (M), which made up the tactical component of the wing. The Army air garrison in Puerto Rico was therefore not called upon at that time to assist in establishing air defense units on other islands of the Caribbean.³⁴

In Jamaica, Antigua, St. Lucia, British Guiana, and the Bahamas, Army engineers were constructing facilities at each base to permit operations by one heavy bombardment group and one long-range reconnaissance squadron. An airfield in Trinidad was being furnished with similar facilities, along with provisions for one interceptor pursuit group.³⁵ Bermuda, while not in the Caribbean area, was related to both Caribbean and continental defense, and airfield construction on the leased site was being designed to accommodate one composite group of the AAF.³⁶ Accommodations at the new bases did not necessarily determine the size of garrisons, for tactical units were not available in sufficient numbers to be stationed at all of the fields. The approved peacetime garrisons called for one heavy bombardment squadron and a group headquarters at Bermuda, an airways detachment at Jamaica, Antigua, St. Lucia, and British Guiana, and a composite wing of one heavy bombardment group, one pursuit group, and one reconnaissance squadron at Trinidad.³⁷ Considerable importance was attached to early garrisoning of the Piarco airport at Trinidad. In the latter part of April 1941 a base force sailed from New York, while an air contingent of some 400 officers and enlisted men with six B-18A's moved from the Canal Zone to Trinidad.³⁸ In July other Caribbean bases began to receive garrisons, when airways detachments and infantry units were shipped from New York to British Guiana and St. Lucia. Similar forces were sent to Antigua in September and to Jamaica in the following month.³⁹

Despite the attention given to new bases, the Canal Zone continued to be the focal point of Caribbean defenses. France Field on the Atlantic side of the Zone and Albrook Field on the Pacific side were

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air bases of long standing, while a third permanent base, Howard Field, was nearing completion three miles from Albrook. Scattered throughout Panama were seven auxiliary airfields, two of which were ready for immediate use, and a number of emergency landing fields which did not require extensive improvements. By the first week of December 1941 a total of 183 planes, as opposed to an authorized strength of 396, were assigned to bases in the Canal Zone. At Albrook Field were 114 aircraft of all types, including 71 P-40's, while France Field had 49 planes, most of them obsolete, and Howard Field had 20 aircraft, including 12 A-20A's. Such outmoded types as the P-26 and the A-17 made up a large part of the strength; their value in protecting the canal was negligible.⁴⁰ Of eight B-17's, which comprised the heavy bombardment force of the entire Caribbean area, four had been sent to Trinidad and four were in Panama by November, but the growing crisis in the Far East resulted in a move to concentrate the planes in the Canal Zone by December. Tactical units defending the canal included the 6th and 9th Bombardment Groups (H), the 59th Bombardment Squadron (L), the 16th, 32d, and 37th Pursuit Groups, the 7th and 44th Reconnaissance Squadrons, and the 39th Observation Squadron. Three air base groups, an air depot, and signal and ordnance units performed the necessary service functions in the Canal Zone.⁴¹

Steps toward co-ordination of defense efforts in the Caribbean area had been taken early in 1940. Joint Army and Navy war plans, recognizing the possibility of enemy action in the region, had defined the bounds of a Caribbean theater, and Army plans provided for designation of the commanding general of the Panama Canal Department as commanding general of the theater. In the spring of 1941 the plans were put into action with formation of the Caribbean Defense Command; organization of a single air force as a part of the command was a natural concomitant to the action. The defense command was divided into Panama, Puerto Rico, and Trinidad sectors, the commanders of which were responsible for defense of the respective areas and for training of all assigned personnel except those of the Caribbean Air Force. The air force, organized on a theater-wide basis and subdivided into bomber, interceptor, and service commands, was charged with planning, training, and execution of plans for air operations and defense against air attack throughout the Caribbean. The basic principle of its organization was the concentration of force

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under one command in order that the full weight of available air power could readily be thrown against an enemy at whatever point he might appear.

Operational planning in the Caribbean took on a new note of realism during the months just prior to American entry into the war. Joint plans for armed assistance to certain South and Central American republics, in the event of attack by a non-American state or by "fifth columnists," provided for action by Caribbean defense forces and also troops in the United States. Essential features of the plan called for the occupation on forty-eight hours' notice of strategic interior points by Caribbean-based troops transported by air, the prompt occupation of seaports by naval forces, and the reinforcement of these forces by Army expeditionary troops dispatched from the United States. It was clear that the security of the Panama Canal would be menaced by the successful overthrow of recognized governments in countries near the canal and the establishment of regimes opposed to the principles of Pan American solidarity. Although there was no occasion to invoke these plans, their existence gave the Caribbean Air Force a high priority in the delivery of transport planes from the United States and enabled Caribbean defense forces to experiment with airborne operations in the fall of 1941. Following activation of an infantry airborne battalion at Howard Field and arrival of a parachute battalion from the United States, co-operative exercises were carried out by ground and air forces in the Canal Zone, and subsequent reassignment of the airborne units from the Panama Canal Department to the Caribbean Air Force for training purposes made possible a higher degree of co-ordination. Of the overseas departments of the Army, the Caribbean Defense Command was unique in the possession of airborne forces on the eve of hostilities.

Local planning for armed assistance to Latin-American republics served to emphasize the need for closer Army-Navy co-ordination in the Caribbean. A considerable body of evidence indicated that "voluntary co-operation" would not insure effective joint defense, but the insistence of the Caribbean Defense commander upon unity of command was to no avail prior to American entry into the war. The subject of joint action came to the fore in mid-1941 when an increasing number of reports of Axis vessels in Caribbean waters led the local Navy commandant to request assistance from the Caribbean Air Force. By September the air force had been asked to assume 50

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per cent of all search operations in the area. Total compliance would have completely disrupted the striking force which the bomber command was obligated to maintain in order to attack enemy naval craft or installations within its radius of action. Both naval and military forces were operating below their authorized strength, and regardless of desires for mutual assistance and plans to that end, the Caribbean area was sadly deficient in the matter of aerial overwater reconnaissance.

The vital importance of this phase of canal defense was revealed in an estimate of enemy capabilities prepared by the Caribbean Defense Command in the latter part of November 1941. Japan was regarded in respect to the canal itself as the primary potential enemy, and a carrier-based attack from the Pacific was considered "not an improbable feat." Other possibilities were taken into account, but it was concluded that in any event the most important defensive measure was "increasing and thorough reconnaissance and observation of the air, sea, and land approaches to the Canal Zone." Existing forces in the area were regarded as sufficient to repel any probable initial attack on the canal provided they were given timely warning of the approach of hostile forces. The inability of defending naval and military air forces to perform the required amount of reconnaissance and to provide the "timely warning" constituted perhaps the chief weakness in Caribbean defense immediately prior to American entry into the war. It was a weakness which was recognized by both Army and Navy commanders; their expressed hope lay in the postponement of attack by an enemy until the defending forces could achieve the proper degree of co-ordination and the necessary equipment for complete coverage of the vast sea frontiers.

The emergence of the air weapon as the predominant element of Caribbean defense was not unnatural in the light of the European war and the geography of the area. The experience of Great Britain and other countries at the hands of the Luftwaffe had affected the growth of American air power in general and the strengthening of overseas garrisons in particular. The climax of prewar air preparations in the Caribbean occurred in September with the elevation of General Andrews from his post as head of the air force to that of the Caribbean Defense Command, marking the first time an airman had ever commanded all Army forces in the area. The Caribbean Air Force, now under the command of Maj. Gen. Davenport Johnson, was not

adequately equipped by 7 December 1941 to carry out all of its responsibilities. Although approximately 165 P-40's had arrived in the Caribbean, they were not furnished with the necessary devices to assure interception or to operate effectively at night. The pursuit aircraft were on the alert twenty-four hours a day, but only about 50 per cent of their practice missions resulted in interceptions. A mere handful of heavy bombers comprised the only long-range aircraft in the area. The absence of air bases on outlying islands in the Pacific left western approaches to the canal but poorly covered, and the plan to furnish armed assistance to Latin-American countries created further demands on the limited number of aircraft. But by virtue of its organization as an integrated force and its acquisition of base sites far to the east of the canal, the Caribbean Air Force was approaching a suitable stage of preparedness—at least for its task of defense against a European enemy.⁴²

Alaska

The youngest and smallest overseas air force was located in Alaska, where some 2,200 officers and men of the AAF were stationed by the first week in December 1941.⁴³ Aircraft and tactical units had not been sent to Alaska until construction of Elmendorf Field at Anchorage was well under way. When the first Air Corps representatives, consisting of one officer and two enlisted men, arrived for duty at Anchorage in July 1940, only preliminary work had started on the field; but by early 1941 a temporary hangar was ready for use and tactical units began to arrive from the United States. In the latter part of February the 23d Air Base Group, the 18th Pursuit Squadron with twenty P-36's in crates, and the headquarters squadron of the 28th Composite Group took up quarters at Elmendorf. These units were followed in March by the 73d Bombardment Squadron (M) and the 36th Bombardment Squadron (H), equipped with a total of twelve B-18A's.

Consolidation of the military air units occurred on 29 May with formation of the Air Field Forces, Alaska Defense Command. The new organization was charged with training of Air Corps personnel, maintenance of aircraft, and planning and execution of Alaskan air defense. On 17 October the designation Air Field Forces was changed to Air Force, Alaska Defense Command.⁴⁴ The Alaskan air force, more closely related to the Zone of the Interior than other overseas

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air forces, depended upon a complicated chain of command. In order to communicate with officials in Washington it was necessary for the air force to direct its correspondence through the Alaska Defense Command, which forwarded the material to headquarters of the Western Defense Command at San Francisco; only from this point could the correspondence be sent directly to the War Department. The close attention given to Alaskan air needs by both the Alaska and the Western Defense Commands, however, tended to compensate for any delays encountered in the routing of requests.

The decision to station military air units in Alaska had not been made until after the outbreak of war in Europe, although the Air Corps for some years had advocated such a move. Once the threat to American security became clear, there was general agreement as to the necessity for systematic air defense of Alaska. But determination of the position which military aviation would occupy in the total system of Alaskan defense required a considerable amount of discussion among the services, and several basic issues were not settled until the eve of hostilities. Brig. Gen. Simon B. Buckner, Jr., heading the Alaska Defense Command, sought approval of a program of strategically located airfields and adequate garrisons for the bases. It was estimated that any enemy assault on the territory would be primarily an air attack, which could be opposed only by air forces previously stationed in the area. In joint plans of the Army and Navy, however, Alaskan defense was essentially a function of the Navy, supported by air and ground forces at those points where coastal installations required protection from air raids. Little attention was originally given to the potentialities of long-range striking forces in opposing an enemy assault, although the Air Corps was convinced of the importance of all phases of military aviation in Alaskan defense. Because of the nature of the terrain and the lack of transportation facilities, ground forces were virtually tied to their stations, and local Army commanders felt that only strong air forces and a system of well-developed airfields could assure the mobility needed to repulse a coordinated enemy attack.⁴⁵ The practicability of air operations in Alaska had been demonstrated by both military and commercial aircraft, and a new AAF cold-weather experimental station at Ladd Field, Fairbanks, was preparing to conduct tests which would reveal better methods of equipping aircraft for arctic operations.

The plan for air defense, as worked out by the Alaska Defense

Command, provided for a group of advanced bases, a series of intermediate airfields, a chain of fields between Anchorage and the United States, and an extensive aircraft warning system. The first item provoked the greatest amount of discussion among the services responsible for protection of Alaska. The older theory of Alaskan defense had been centered around the Seward-Anchorage areas, supplemented by joint Army and Navy defense of naval installations at Kodiak Island; and control of the North Pacific was naturally regarded as a task of the Navy, operating from bases at Kodiak and Dutch Harbor. The latter base, on Unalaska Island in the Aleutians, constituted the westernmost installation in the area. Protection of Dutch Harbor was a function of Army air units, and since that protection could not be furnished without air bases in the vicinity, the Alaska Defense Command proposed to construct a field on Umnak Island, sixty-five miles west of Dutch Harbor. Naval authorities viewed the proposal as undesirable, for Umnak had no adequate harbor development and construction of the base would put an increased strain on sea communications at a time when shipping was at a premium.*

There was, however, a cogent reason for development of an airfield on Umnak, beyond considerations of immediate protection of Dutch Harbor. Such a base would increase the striking range of Army bombers, enabling them to command a radius 400 miles greater than would be possible from such a point as Chignik, on the Alaska Peninsula. It was important that any hostile force be intercepted before it could launch an attack, and it was likewise important that enemy forces be prevented from establishing bases in the outer Aleutians. For both contingencies, the existence of an airfield and a long-range striking force in the Aleutians seemed to be necessary. The Aleutian Islands comprised steppingstones which could lead in two directions, and their offensive possibilities for American forces would be nullified by a lack of airfields. At the insistence of the Navy Department the Umnak proposal was referred to the Joint Board of the Army and Navy, and approval was given on 26 November 1941.⁴⁶

The remainder of the air defense program met with little opposition. Airfield construction was proceeding under the direction of Army engineers and the Civil Aeronautics Administration, although in the colder areas of Alaska the work was impeded by arctic conditions. Heavy rainfall, particularly along the southern and western

* See maps, pp. 305, 463.

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coast line, prevented uninterrupted work. Every advantage had been taken of the summer months, and by the fall of 1941 Elmendorf, Ladd, Kodiak, Yakutat, and Nome fields were capable of supporting tactical operations by at least one squadron each, while more than a dozen additional fields of various sizes were nearing completion. A detailed plan had been drawn up for aircraft warning installations, including radar detector stations and filter centers. The plan was approved on 3 December, but almost no equipment was available for use.⁴⁷ Army airways communications personnel, who had arrived in the spring of 1941, were operating at four stations, despite difficulties imposed by peculiar radio atmospherics and the lack of adequate power.⁴⁸

No additional air units were sent to Alaska prior to the opening of hostilities, and the inability of the single composite group to carry out assigned functions of Army aviation was a chief cause of concern to commanding officers. In Alaska, as at other overseas bases which were within reach of reinforcement by air from the United States, the AAF adhered to the policy that the aviation complement of Army garrisons should be held to the minimum required to meet initially such emergencies as might arise. The policy was based upon the generally sound principle of concentration of force within the United States under plans to utilize the special mobility of the air weapon in case of attack upon any of our outposts. But the heads of both the Alaska and the Western Defense Commands, along with Lt. Col. Everett S. Davis, commanding officer of the air force, joined in urging that additional air units be sent to Alaska for permanent station. It was pointed out that an attack or threat of attack on Alaska could be met only by aircraft present at the time the threat occurred, and in the fall of 1941 such a threat was regarded as a possibility. On islands off Alaska Peninsula and along the north and west coasts of Alaska, numerous sites existed which might be used for hostile landings. With only a small amount of work, enemy forces might prepare sheltered bays and landing strips for use as temporary naval and air bases and it would be difficult for defenders to dislodge them. Commanders responsible for Alaskan defense felt that in an emergency air reinforcements from the United States, in all probability, would not arrive in time. Granted that reinforcements could reach Alaska in time, pilots and crewmen trained only in the United States would be unfamiliar with the Alaskan terrain and flying conditions, and the

resulting loss of life and equipment might be prohibitive. The heads of the Alaska and Western Defense Commands therefore maintained that the air defense of Alaska must be made by planes permanently stationed in the territory and by crewmen trained in the area.⁴⁹

Headquarters of the AAF appreciated the urgency of the situation in Alaska, and remedial action was promised as soon as the necessary aircraft should become available.⁵⁰ Early in November the Chief of the AAF directed that plans be made to send a complete bombardment group to Alaska, and studies were also undertaken to determine the requirements for accommodating a pursuit group in the same area.⁵¹ These moves had not advanced beyond the planning stage by 7 December 1941, and the aircraft strength in Alaska still consisted of twelve B-18A's and twenty P-36's. The 28th Composite Group, though undermanned and poorly equipped, had been trained in Alaskan flying, and every pilot had made several landings at each airfield then ready to receive planes.⁵² Numerous flights had been made for the purpose of aerial photography and mapping, and coastal patrols were being run from Seward to Point Barrow.⁵³ Combat crews were ready for transition to more up-to-date planes, but the relatively low priority held by Alaska among the overseas garrisons precluded the assignment of any modern planes to the North Pacific area.⁵⁴ The air force of the Alaska Defense Command was, in fact, the only overseas air force which did not possess a single up-to-date plane prior to the outbreak of hostilities. The necessity for Alaskan air defense was by this time clearly recognized, and decisions required to implement that defense had been rendered.

Hawaii

Air defenses in the Territory of Hawaii were the result of more than twenty years' development, and their status by 7 December 1941 was relatively imposing. A total of 754 officers and 6,706 enlisted men made up the personnel complement of the Hawaiian Air Force, which was concentrated on the island of Oahu. The force, commanded by Maj. Gen. Frederick L. Martin, was organized tactically into the 18th Bombardment Wing, with headquarters at Hickam Field, and the 14th Pursuit Wing, with headquarters at Wheeler Field. Units of the bombardment wing included the 5th and 11th Bombardment Groups (H), the 58th Bombardment Squadron (L), and the 86th Observation Squadron.⁵⁵ The latter unit was stationed

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at Bellows Field, a road distance of some twenty-eight miles from Hickam. The 15th and 18th Pursuit Groups, components of the pursuit wing, were stationed at Wheeler, although one squadron was in training at Haleiwa, a small field in the northern section of the island. Two air base groups, a transport squadron, maintenance companies, and service detachments made up the remainder of the air force.*

In addition to the major airfields on Oahu, emergency and auxiliary fields had been prepared on other islands of the Hawaiian group, including Kauai, Lanai, Hawaii, Maui, and Molokai.⁵⁶ Of the 231 military aircraft assigned to the air force on 7 December, approximately half the number could be considered up-to-date models. Twelve B-17D's, twelve A-20A's, twelve P-40C's, and eighty-seven P-40B's comprised the more modern aircraft, while thirty-three B-18A's, thirty-nine P-36A's, fourteen P-26's, and an assortment of observation, training, and attack planes made up the remainder of the total.⁵⁷

The Hawaiian Air Force had existed as an integrated command only slightly more than one year. From the time of the arrival of the first tactical squadron in 1917 to 1931, when the military air component in the territory comprised some seven tactical squadrons and two service squadrons, the air units had been loosely attached to the Army's Hawaiian Department without benefit of an air commander. In 1931 an important administrative step was taken in formation of the 18th Composite Wing, which provided the separate squadrons with an air headquarters. Expansion of the Air Corps brought about a need for further reorganization in Hawaii, and on 1 November 1940 the Hawaiian Air Force was activated and its bombardment and pursuit units were organized into separate wings. Although the air force remained under the command of the Hawaiian Department, it had acquired the integrated structure necessary for efficient operation.⁵⁸

Since 1935 the War Department had given first priority to the Hawaiian Islands in the distribution of troops and munitions among overseas garrisons. But, upon the outbreak of war in Europe, the necessity for giving attention to bases in the North Atlantic and the Caribbean, together with the urgent demands of a vast program of expansion, had altered peacetime priorities; and not until early 1941 was it possible to send modern planes and additional anti-aircraft artil-

* See map, p. 196.

lery to the Hawaiian Department.⁵⁹ The aircraft strength at the beginning of 1941 consisted of 117 planes, all of them obsolescent or antiquated.⁶⁰ In mid-February, thirty-one P-36's, with pilots and crew chiefs, were placed aboard the carrier *Enterprise* at San Diego, California, and sent to the Hawaiian Islands. Modern pursuit planes were made available within the next two months, and by mid-April a total of fifty-five P-40's had been transferred via carrier from the West Coast to Oahu, where they were flown off the deck to Army airfields.⁶¹

A decision to allocate B-17's to the Hawaiian Air Force provoked a considerably greater amount of discussion and entailed far more intricate planning than did the transfer of the P-40's. Heavy bombers could reach their destination only by flying, and no mass flight of heavy bombers had ever been made over the 2,400-mile stretch between the West Coast and Hawaii. In official quarters there was at first some hesitation to undertake such an operation for fear of public reaction in the event of failure.⁶² The need for an air striking force in Hawaii, however, seemed to justify the risks involved, and early in April the Fourth Air Force began to make preparations for ferrying twenty-one B-17's to the Hawaiian Islands. The 19th Bombardment Group, under the command of Lt. Col. Eugene L. Eubank, was selected to fly the planes, and service tests were conducted on the aircraft before they were certified for the operation. Weather data and navigational problems were studied, while arrangements were made for assistance by the Navy Department, Pan American Airways, and commercial radio stations in San Francisco and Honolulu. The Navy stationed four guard vessels at 500-mile intervals along the path of the flight, and all naval vessels in the vicinity were asked to transmit weather information. The Navy also assisted in establishing communication facilities to insure the proper ground-air liaison in San Francisco and Honolulu; commercial airline officials in the same locations agreed to transmit weather forecasts and map signals; and commercial radio stations in the two cities arranged to provide homing signals by broadcasting continuously during the flight. As a result of thorough preparations, the flight was accomplished without undue incident. On 13 May twenty-one B-17D's took off from Hamilton Field, California, and on the next morning, after an average elapsed time of thirteen hours and ten minutes, the planes landed at Hickam Field within five minutes of the estimated time of

1. AREA 100 SQ. MILES, 100 SECTORS
MILES FROM OAHU EMPLOYING 72 B-17D
AIRPLANES

1. AREA 100 SQ. MILES, 100 SECTORS
2. AREA 100 SQ. MILES, 100 SECTORS
3. AREA 100 SQ. MILES, 100 SECTORS
4. AREA 100 SQ. MILES, 100 SECTORS

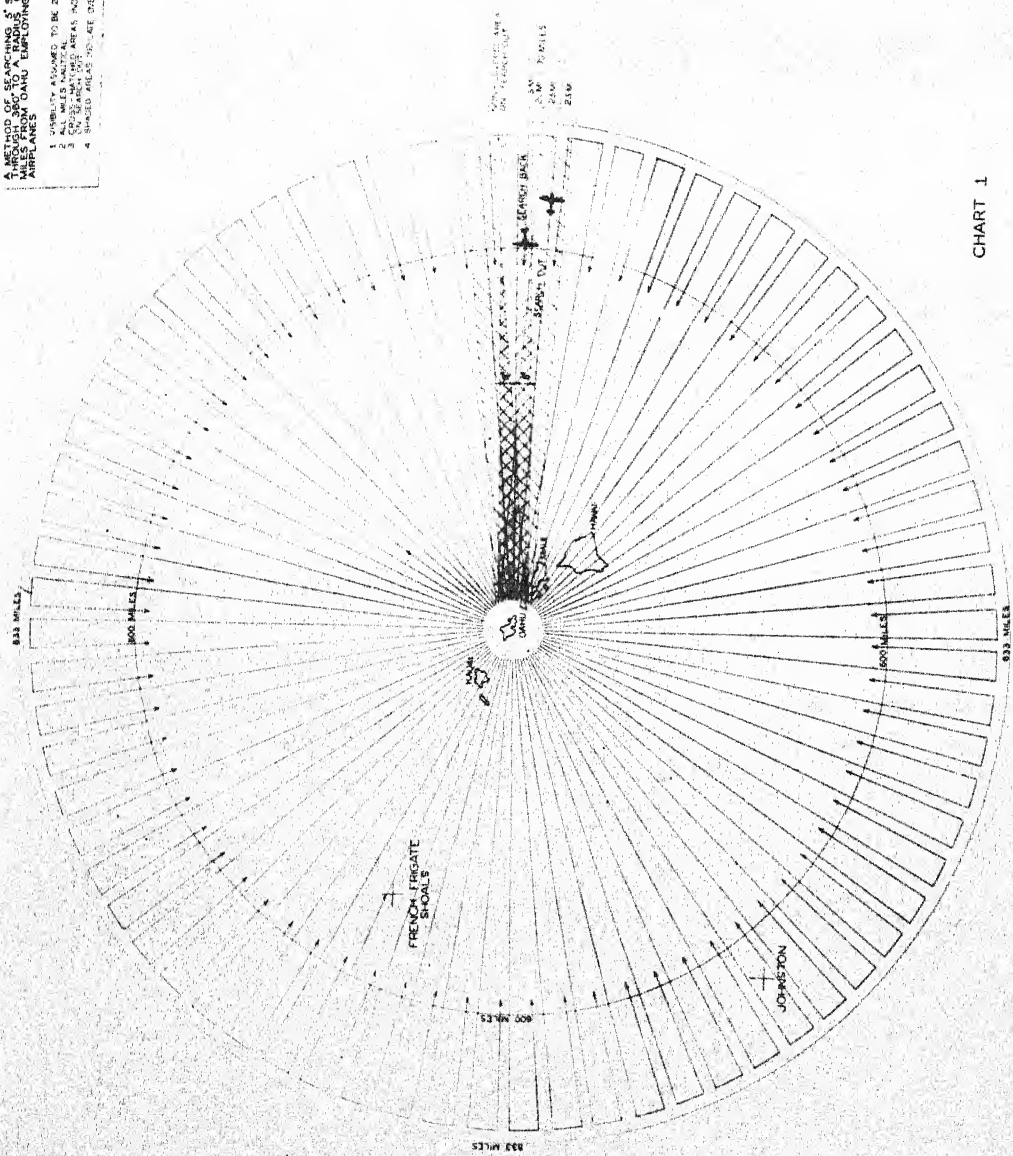
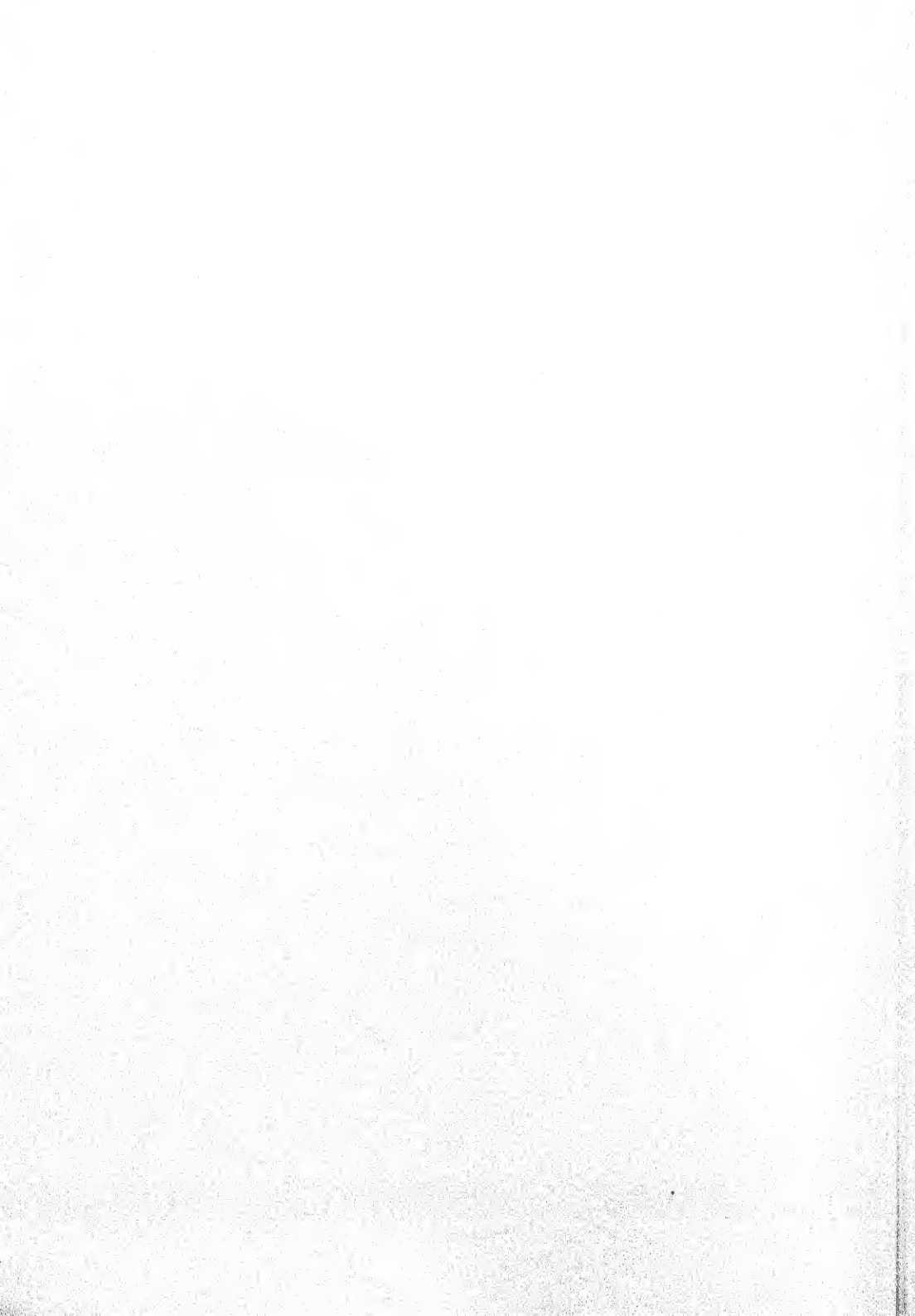


CHART 1

SEARCH SECTORS: A Plan for the Employment of Bombardment Aviation in the Defense of Oahu.



arrival. Members of the Hawaiian Air Force, who had never flown heavy bombers, began to receive intensive instructions from fifteen crew members who had made the flight, while the remainder of the 19th Bombardment Group sailed back to the mainland.⁶³

The allocation of a greater number of heavy bombers to the Hawaiian Air Force than to any other overseas garrison in the spring of 1941 was an indication of a growing concern over the possibility of war in the Pacific. It was also a testimony to the importance of Hawaiian defense, an importance which stemmed both from the existence of Pearl Harbor naval base on Oahu and from the position of the Hawaiian Islands in continental and hemisphere defense. The duties of Army and Navy forces protecting the islands had been clearly defined in joint defense plans. The principal joint task assigned to forces permanently based in the territory was "to hold Oahu as a main outlying naval base."⁶⁴ In accordance with standard procedures established for American forces on the continent and overseas, the Army was to provide the mobile land and air forces required for direct defense of the island coast lines against attack, while the Navy was to conduct operations directed toward defeat of an enemy force in the vicinity of the coast and to support the Army in repelling attacks on coastal objectives. To accomplish its mission the Navy was charged with the provision and operation of "a system of offshore scouting and patrol to give timely warning of an attack and, in addition, forces to operate against enemy forces in the vicinity of the coast."⁶⁵ It thus became the responsibility of the Navy to maintain the long-range reconnaissance that would be required for advance notice of an approaching enemy, but to the Army fell the operation of an air warning system that would promptly alert all defense forces against specific attacks by air. Since such a division of responsibility called for close co-operation between the services, Army and Navy commanders in Hawaii had agreed that if the threat of a hostile attack were sufficiently imminent to warrant joint action, each commander would "take such preliminary steps as are necessary to make available without delay to the other commander such proportion of the air forces at his disposal as the circumstances warrant."⁶⁶

These arrangements, it can easily be seen, were more theoretical than practical, more general than specific. The need for a thorough reconsideration of Hawaiian air defense led the War Department General Staff in July 1941 to order that the AAF make a study of

"the air situation in Hawaii." The result was formation of a detailed plan for the employment of bombardment aviation in the islands. The plan, drawn up by the Hawaiian Air Force, regarded the two existing pursuit groups as adequate so long as they were maintained at full combat strength. Projected radar installations—six detector stations were in operation by December 1941—were also considered to be reasonably sufficient. The heart of the plan lay in three major provisions: a complete and thorough air reconnaissance of the Hawaiian area during daylight; an attack force available on call to hit any target located as a result of the search; and, if the objective should be an aircraft carrier, attack against the target on the day before it could maneuver into position to launch its planes for an assault on Oahu. An early morning carrier attack was regarded as the most likely line of action to be taken by an enemy. The proposed plan for air defense pointed out that if the Hawaiian Air Force were to assume responsibility for its own reconnaissance, seventy-two B-17's would be required to search daily the area within the circle of an 833-nautical-mile radius from Oahu, each plane covering a 5° sector. Since the required number of planes represented more heavy bombers than were then in use in the entire AAF, the plan obviously could not be put into operation. But the position of the Hawaiian Air Force had been made a matter of record; an aggressive defense, provided by long-range striking planes, was felt to be "the best and only means" of locating and attacking enemy carriers before they could come within launching distance of Oahu.⁶⁷

The ability of the Hawaiian Air Force to perform its mission was affected in the fall of 1941 by a decision of the War Department to send reinforcements to the Philippines and by calls from the Navy Department for assistance in the defense of outlying islands in the Hawaiian area. The former gave the Hawaiian Air Force a lower priority in allocation of aircraft and required a diversion of some of its strength. The naval requests for assistance proved to be only a threat of diversion, but the total effect of these actions was to draw attention away from the immediate defense of Oahu. The Navy, which was charged with defense of certain outlying islands, found that because of a shortage of aircraft it would not be able to provide air forces for protection of Midway and Wake islands. Late in October a Navy request for Army air garrisons met with the reply that essential installations must first be provided before any aircraft could

be stationed on the islands.⁶⁸ The Navy was rapidly improving airfields at both locations, but service and maintenance facilities and housing were not then satisfactory for permanent garrisons. Nevertheless, the commander of the Hawaiian Department, Lt. Gen. Walter C. Short, on 28 November notified the War Department that two pursuit squadrons, each consisting of approximately 120 officers and men and 25 P-40's, were ready for dispatch by carrier to Wake and Midway. The islands were to be reinforced also by Marine aircraft within a few days. When it was pointed out that the P-40's would be frozen to the islands because of their inability to land on carriers, the Navy advised that final decision as to shipment of the planes should be held in abeyance.⁶⁹

By this time, military and naval commanders in Hawaii had received warning of an impending break in American and Japanese relations, and forces in the islands had been placed on an alert. The standard operating procedure of the Hawaiian Department outlined three alerts: the first required defense against acts of sabotage and uprising within the islands; the second called for security against attacks from hostile subsurface, surface, and air forces, in addition to defense against acts of sabotage; and the third provided for occupation of all field positions by all units, in preparation for the maximum defense of Oahu and Army installations on outlying islands in the Territory of Hawaii.⁷⁰ Because a local estimate of the situation indicated that sabotage was more likely than outright attack by hostile forces, the Hawaiian Department ordered Alert No. 1 into operation and notified the War Department of its actions. Aircraft were concentrated in hangars or in open spaces near by, and extra guards were placed about the aircraft and military installations. Construction was started on protective fencing and floodlighting projects.⁷¹ Of the imminence of hostilities, there was little doubt; but it was generally felt that the most likely area of attack was in the Philippines.⁷² The eve of hostilities therefore found the Hawaiian Air Force continuing, as it had throughout the fall of 1941, to aid in rushing aerial reinforcements to the Philippines.

The Philippine Islands

American forces in the Philippine Islands were not ready for war by December 1941, but they were well aware of the threat of war and preparations were going forward in accordance with a plan to

hold the islands against enemy assault. Army air units, organized into the Far East Air Force under Maj. Gen. Lewis H. Brereton, had a total of some 8,000 officers and men and more than 300 aircraft, concentrated largely on the island of Luzon. Fewer than half of these aircraft were suitable for combat, and much of the equipment for air defense was still awaiting shipment from the United States.⁷³ But the air force was equipped with thirty-five heavy bombers, more than any other Army air force, either on the continent or overseas. This fact was significant, for the Philippines had not always enjoyed top priority among American outposts. Indeed, for many years the Air Corps garrison there had been regarded as little more than a token force and had not been considered capable of meeting "serious contingencies."⁷⁴ As late as the spring of 1940, military aviation in the islands consisted of a mere handful of obsolete planes such as the P-26 and B-10, and during the summer of 1940 only three B-18's were allotted to the Philippines. No additional aircraft could be spared at that time from units in the United States, and prospects of an early augmentation of pursuit strength were dimmed by a statement from the Air Corps that the twenty-eight P-26's then assigned to the Philippine Department would have to suffice until late in 1941.⁷⁵ Between the time of this statement and the outbreak of hostilities in the Pacific, however, War Department policy with regard to the Philippines underwent a drastic change, and the rapid expansion of aerial defenses in the islands represented one of the more important results of that change.

The possibility of American involvement in a Pacific war had been heightened in the fall of 1940 by formation of a pact between the Axis powers and Japan. Agreeing to support each other's efforts in establishing and maintaining "a new order of things" in Europe and East Asia, the parties announced that they would assist one another "with all political, economic, and military means when one of the three contracting powers is attacked by a power at present not involved in the European war or in the Chinese-Japanese conflict."⁷⁶ The reference of course was obvious, and it carried a threat which President Roosevelt described in terms of the greatest danger faced by the nation since settlement of the continent.⁷⁷

As part of a prompt attempt to strengthen the defenses of our most western outpost insofar as it was possible, the Chief of the Air Corps in October directed that forty-eight P-35's, scheduled for shipment to

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Sweden, be diverted to the Philippines. Late in November the 17th and 20th Pursuit Squadrons arrived from the United States and took up their station at Nichols Field on the outskirts of Manila.* In March 1941 the Hawaiian Department was ordered to ship eighteen B-18's by transport to the Philippines, and the following month a merchant ship sailed from the United States for Manila bearing thirty-one P-40B's. The arrival of reinforcements and the prospect of receiving additional aircraft necessitated the creation of a more modern air organization in the Philippines. The Army air garrison, which had hitherto been organized into the 4th Composite Group, consisted of the Headquarters and Headquarters Squadron, the 3d Pursuit Squadron, and the two new pursuit squadrons at Nichols Field, and the 28th Bombardment and 2d Observation Squadrons at Clark Field, approximately sixty miles north of Manila. On 6 May 1941 these units, along with the 20th Air Base Group and supporting units, were organized into the Philippine Department Air Force. This change proved to be only the first of a series of steps designed to bring about a more effective air force structure in the Philippines.⁷⁸

The German attack on Russia in June 1941, together with mounting evidence of Japan's intention to take advantage of the greater freedom of action resulting therefrom for the purpose of a conquest of southeast Asia, lent a new sense of urgency to all defensive preparations in the Pacific and particularly to those in the Philippines.⁷⁹ Gen. Douglas MacArthur, military adviser to the Philippine government and former chief of staff of the U.S. Army, was recalled to active duty effective 26 July 1941 and placed in command of United States Army Forces in the Far East. The Philippine Department Air Force, which became a part of the new command, was given a more flexible organization and a new designation on 4 August, when it became the Air Force, United States Army Forces in the Far East. The force by this time was able to put into the air one squadron of P-40B's, two squadrons of P-35A's, one squadron of P-26A's, and two squadrons of B-18's, but against even a mildly determined and ill-equipped foe, this show of air strength would have been sadly deficient. Japanese capabilities argued therefore for a radical upward revision in the apportionment of aircraft to the Philippines; moreover, the geographical position of the islands afforded the United States an opportunity, while providing for their greater security, to emphasize its opposition to further Japa-

* See maps, pp. 202, 221.

nese aggression in Asia. AAF Headquarters felt that a striking force of heavy bombers would be a necessary part of any attempt to guarantee the security of the Philippines, and there was a feeling among War Department officials that the presence of such a force would act "as a threat to keep Japan in line." Consequently, and as a part of the over-all plan for maintaining a strategic defensive in the Pacific, the AAF now allocated to the Far East four heavy bombardment groups, to consist of 272 aircraft with 68 in reserve, and an additional two pursuit groups of 130 planes.⁸⁰

Although the supply of aircraft in the United States did not permit immediate implementation of these plans, the necessary authority was received early in August when the Secretary of War approved a program for sending modern planes to the Philippines as soon as they became available. Arrangements were made for fifty P-40E's to be sent directly from the factories and for twenty-eight P-40B's, taken from operating units, to be shipped to the Philippines in September. Procurement of heavy bombers was more difficult, for in the summer of 1941 not a single group in the AAF was completely equipped with such planes. The 19th Bombardment Group, which had ferried the first B-17's to Hawaii in May, was selected for permanent transfer to the Philippines, and the group was given priority in the assignment of B-17's. So urgent was the need for heavy bombers in the Far East, however, that the AAF did not wait for the 19th Group to pioneer an air route to the Philippines. By the end of July it had been decided that a provisional squadron from the Hawaiian Air Force would make the first flight of land-based bombers across the Pacific.

Preparations for the flight were made with utmost secrecy. Since information was lacking on airfields in Australian territory, two Army officers were flown by Navy plane from Honolulu in order to survey facilities at Rabaul in New Britain, at Port Moresby in New Guinea, and at Darwin in Australia. Runway construction on Midway and Wake islands was pushed by naval authorities, while picked crews from the Hawaiian Air Force underwent intensive training for the unprecedented flight. On the morning of 5 September the 14th Bombardment Squadron (H), consisting of nine B-17D's and seventy-five crew members under the command of Maj. Emmett O'Donnell, Jr., took off from Hickam Field and headed for the first stop at Midway, 1,132 nautical miles distant. The first leg of the flight was completed after seven hours and ten minutes. The crews refueled and serviced

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their own planes, staked them down for the night, and then retired for a few hours' rest, with many of the men sleeping under the wings of the aircraft. At 0445 the next morning the planes took off for Wake Island, 1,035 miles away, where they arrived at 1120.

Since the next hop to Port Moresby involved flying over some of the Japanese mandated islands, the planes took off at midnight in order to pass over the territory unseen and thereby avoid any possible international incident. Climbing from their usual altitude of 8,000 feet to 26,000 feet, the bombers turned out all lights and maintained complete radio silence over the islands. Although they flew in a heavy rain and without communications, the B-17's kept their assigned positions, and the 2,176-mile hop to Port Moresby was completed at noon on 8 September (local time). Australian officials were most hospitable to the crews, who remained at Port Moresby until the morning of 10 September. The next hop, 934 miles to Darwin, was covered in six and one-half hours, and early on the morning of 12 September the planes took off for Clark Field, near Manila. Upon encountering stormy weather, the B-17's maneuvered into storm echelon, flying over water at an altitude of from 100 to 400 feet. By mid-afternoon the bombers reached Clark Field, where they landed safely in a blinding rain.⁸¹ Successful completion of the historic flight, despite primitive servicing facilities and incomplete weather data, offered reassuring proof that the Philippines could be reinforced by air.

General MacArthur, who regarded the air defense of the islands as one of the more serious deficiencies to be remedied, urged prompt action to provide additional aircraft and the equipment for an adequate aircraft warning service. A program of airfield development was already under way, and funds had been provided for a more extensive program. Particularly welcome therefore was the news that his command was scheduled to receive before the end of November a light bombardment group equipped with fifty-two A-24's and a heavy bombardment group with twenty-six B-17's. These forces were the practical expression of a policy which, despite the many urgent demands on the AAF's limited resources, gave to the Philippines the highest priority in the delivery of needed combat forces. Indeed, out of an anticipated production in the United States of 220 heavy bombers by the end of February 1942, no less than 165 of the planes had been scheduled for delivery to the Philippines.⁸²

Inasmuch as the aerial route via Midway and Wake was endangered

by the proximity of Japanese forces in the mandated islands, the AAF late in the summer of 1941 undertook to secure approval of a project for a South Pacific ferry route which would enable heavy bombers to reach the Philippines without passing near Japanese territory. During the previous two years, in fact, the Air Corps had attempted to acquire airfield facilities on a number of Pacific island steppingstones to the Far East. Without such bases, the Air Corps did not believe that full advantage could be taken of the potentialities and capabilities of long-range aircraft. The recommendations had been repeatedly turned down, however, and as late as February 1941 the War Department pointed out that it had no plans for movement of long-range Army aircraft to the Far East and that it could then visualize no need for such plans. It consequently seemed inadvisable to establish air bases which "might possibly fall into the hands of the enemy." But within six months the situation was reversed. Not only did the War Department approve AAF plans for a South Pacific air route, but the project received top priority among those agencies charged with its development. After investigation of several possible routes, the AAF on 3 October forwarded its recommendations to the Chief of Staff, who immediately approved them and issued the necessary orders. The commanding general of the Hawaiian Department was placed in charge of the project, and the Navy and State departments pledged their aid in rapid completion of the undertaking.

Funds were promptly made available from defense aid appropriations, after a presidential letter of 3 October authorized the Secretary of War to "deliver aircraft to any territory subject to the jurisdiction of the United States, to any territory within the Western Hemisphere, to the Netherlands East Indies and Australia" and to construct the facilities needed for effecting such delivery. The State Department opened negotiations with the governments of the United Kingdom, New Zealand, Australia, the Netherlands, and the Free French in order to secure authority for the use of territory under their jurisdiction in the South Pacific. In Hawaii, after receipt of the War Department directive, General Short conferred with the commandant of the Fourteenth Naval District regarding the possibility of using fields under construction by the Navy at Palmyra and Samoa. Upon learning that the necessary facilities would not be completed at Samoa prior to 1 May or at Palmyra prior to 1 August 1942, General Short dispatched survey parties to investigate the possibility of providing mini-

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mum facilities on Christmas and Canton islands, as well as in the Fiji Islands, New Caledonia, and Australia, by 15 January 1942.* It developed that the Navy could not offer assistance in construction until after completion of its own projects; the Hawaiian Department therefore was dependent upon whatever shipping and construction forces the Army could provide.

Results of initial investigations showed that at least one 5,000-foot runway in the direction of the prevailing wind could be prepared by 15 January 1942 at four sites: Christmas, Canton, Suva in the Fiji Islands, and Townsville on the east coast of Australia. By the first week in November the required diplomatic clearances had been received, along with assurances of co-operation from the several governments. In New Caledonia, where Australian forces were making defense preparations with the permission of the Free French, representatives of the Hawaiian Department negotiated with Australian authorities for improvement of airfields which could be used on the South Pacific route. This action resulted in provision of the necessary staging point between the Fiji Islands and the continent of Australia. Responsibility for development of the route from Australia to the Philippines was vested on 27 October in the commanding general of U.S. Army Forces in the Far East. General MacArthur had already initiated surveys of air facilities along that portion of the route and had established contacts with the senior British and Netherlands East Indies authorities. The Hawaiian Department commander continued to direct the development of the ferry route east of Australia. Chartering all the available tugs and barges in the vicinity of Oahu, Army engineers moved construction equipment, personnel, and their own water supply to Canton and Christmas, while the Hawaiian Department secured the services of a commercial engineering company for other points along the route. New Zealand officials, who had agreed to improve an airfield at Nandi in the Fiji Islands, made available all the equipment they could gather for the project.⁸³

Pending completion of the South Pacific route, heavy bombers destined for the Philippines continued to use the route via Midway and Wake. The presence of Japanese air units in the Caroline and Marshall islands constituted a threat both to the Midway and Wake bases and to American aircraft in flight; but defending naval forces were ordered to take special precautions at the two bases, and heavy bomber crews

* See map, p. 429.

were instructed to take evasive action in order to avoid contact with Japanese air units.⁸⁴ By the middle of October, General MacArthur had chartered two ships to transport aviation fuel to Rabaul, Port Moresby, and Darwin, and arrangements had been made for further shipment of fuel to these points from the United States. Since Wake and Midway still had sufficient supplies of fuel for ferrying purposes, the route was ready for more flights of heavy bombers. The 19th Group at Hamilton Field, California, was alerted on 16 October for its flight to the Philippines. Although depot overhaul of the twenty-six B-17's delayed the departure of some of the planes, by the morning of 22 October the last of the aircraft had completed the flight to Hickam Field. Here the group was divided into several flights, since not all of the staging points were capable of accommodating twenty-six bombers at one time. The first flight took off from Hickam Field on 22 October. The entire movement was plagued by unfavorable weather and engine trouble, but within one week the first eight planes arrived at their final destination.⁸⁵ By 6 November twenty-five B-17's of the 19th Group had landed at Clark Field; and the final plane, grounded at Darwin because of engine changes and weather, soon arrived safely.⁸⁶

Possessing thirty-five heavy bombers and the promise of more, the air force in the Philippines now gave evidence of a vigorous determination to protect American interests in the Far East. Further evidence came with the assignment of key personnel and additional units to the air force and with the reorganization of that force in an attempt to better its combat effectiveness. Maj. Gen. Lewis H. Brereton was sent from the United States to become General MacArthur's air commander and to direct a reorganization which had been outlined during a series of conferences at AAF Headquarters in Washington. On 16 November the military air units in the Philippines, under General Brereton's command, became the Far East Air Force, which included the V Bomber Command under Lt. Col. Eugene L. Eubank, the V Interceptor Command under Brig. Gen. Henry B. Clagett, and the Far East Air Service Command under Col. L.S. Churchill. Because of a shortage of experienced officers, only skeleton staffs could be provided for the new units, but the War Department promised to send additional officers and enlisted men by the first available transport. The Interceptor Command was composed of the 24th Pursuit Group, whose pilots had received advanced training in pursuit tactics at

Clark Field and in gunnery at Iba Field, seventy-five miles northwest of Manila. Two additional units, the 21st and 34th Squadrons of the 35th Pursuit Group, arrived from the United States during November and were attached to the 24th Group pending the arrival of their own organizations.

In the Bomber Command the 19th Group was the principal unit. Although only the 30th and 93d Squadrons had been transferred from the United States, the group was given its full complement by the assignment of the 28th Bombardment Squadron (H), which had been in the Philippines for some fifteen years, and the 14th Squadron, which had flown the first B-17's from Oahu in September. Air and ground echelons of the 27th Bombardment Group (L) reached the Philippines on 20 November, but the transport *Meigs*, carrying the group's fifty-two A-24's, was delayed in Hawaii until 24 November when a naval escort was provided. The planes never reached their destination. Other bombardment units were being prepared for transfer to the Philippines. The ground echelon of the 7th Bombardment Group (H) sailed from San Francisco on 21 November, while the air echelon, including that of the 88th Reconnaissance Squadron, was scheduled to proceed by flights of nine aircraft each in late November or early December. The 32d Bombardment and 38th Reconnaissance Squadrons (H) were also being prepared for transfer to the Far East Air Force.⁸⁷

It was expected that the heavy bombers would continue to fly the northern route at least until mid-January 1942, although rapid progress was being reported on the South Pacific route. Provision of air facilities on the western half of the route, under General MacArthur's direction, was greatly aided by the co-operation of other forces in the area. At the time of the division of responsibility for the South Pacific route it had been pointed out that the bombardment units projected for the Far East would require further training upon arrival, necessitating extensive flights in the territory of the Philippines, Singapore, the Netherlands East Indies, New Guinea, and Australia. It was therefore considered desirable to place the construction, expansion, and maintenance of air route stations, training field detachments, and all related matters of supply and personnel under General MacArthur's direct control in the entire area west of New Caledonia and the Solomon Islands.⁸⁸ Australian authorities had offered excellent co-operation since the beginning of heavy bomber reinforcement of the Philippines in September. By November the Commonwealth govern-

ment had granted permission for General MacArthur's representatives to establish not only air ferrying routes, but also training bases, maintenance facilities, munitions storage, and communications in Australian territory. In mid-November, General Brereton left Manila on an inspection tour which included Darwin, Townsville, Port Moresby, Lae, and Rabaul. At Melbourne, in conference with the chief of the Australian air staff, General Brereton initiated negotiations for improvement of Australian airfields and the development of maintenance facilities in accordance with the special needs of American planes.⁸⁹

There was also a growing co-operation of American commanders with representatives of still other nations in the area. The British air chief at Singapore had gone to Manila at least twice to confer with General MacArthur. From the Governor General of the Netherlands East Indies, General MacArthur had requested permission for emergency use of airfields; and negotiations were furthered by conferences with Netherlands officials who visited Manila. Both British and Netherlands representatives had approved the American requests within the scope of their authority. Naval officials of the two governments had held conversations with the commander in chief of the U.S. Asiatic Fleet, while within American commands some co-ordination was achieved between the Far East Air Force and the Navy's Patrol Wing Ten (Patwing 10), comprising thirty PBY's based in the Philippines.⁹⁰

In the United States, Army and Navy officials with the co-operation of British representatives were working out an agreement for the co-ordination of operations in the event of war in the Far East. By 21 November a growing tension in relations with Japan and the prospective growth of military aviation in the Philippines had resulted in a revision of the basic war plan RAINBOW No. 5. The plan had previously visualized only defensive operations by Army forces and the Asiatic Fleet. Augmentation of the Army air garrison in the Philippines had now modified that concept so that the revised plan provided for offensive air operations in furtherance of the strategic defensive, along with operations in direct defense of the Philippine Islands as an air and naval base. In the event of hostilities, the defending air forces were to carry out "air raids against Japanese forces and installations within tactical operating radius of available bases." General MacArthur, who was given broad powers to develop the modified plan in conjunction with local British authorities, was at the same time notified that earlier plans for "British strategic direction" in joint ac-

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tion of associated forces in the Far East had been supplanted by provisions for mutual co-operation.⁹¹

With modification of the basic war plan pointing up the importance of the Far East Air Force in American strategy, the Air Staff in Washington undertook to accelerate the dispatch of heavy bombers to the Philippines. By the second week in November it was planned to send "all modernized" B-17's from the United States to the Far East; within a few days the plan was broadened to include all B-24's as well. Fulfilment of the project would have left only seventeen B-17's within the Zone of the Interior: five B-17E's which were being used for test flights, one B-17C which was in a repair depot, and eleven B-17A's and B's which were obsolete. So serious was the situation in the Far East that even the twelve B-17's of the Hawaiian Air Force were under consideration for transfer to the Philippines. The priority which the Far East Air Force now occupied not only disrupted the training activities of the Hawaiian Air Force, but it also relegated the air defense needs of Hawaii to a secondary place. By 22 November, AAF officials warned that all available heavy bombers and pursuit planes destined for the Philippines should be en route not later than 6 December. This hope was not fulfilled, but it reflected a growing fear that the planned reinforcements would not reach the Philippines in time to insure the defense of the islands. The program of reinforcement had been based on an assumption that hostilities could be postponed until at least March or April 1942. Japanese movements in the Pacific now seemed to presage a much earlier outbreak of hostilities, as also did the strained diplomatic relations between the United States and Japan.⁹²

The Far East Air Force had begun to take precautionary measures early in November.⁹³ General Brereton ordered all post, group, and squadron commanders to be prepared for any emergency. Each headquarters was to operate a message center continuously and was to designate an "alert officer" in addition to the officer of the day. Base commanders were ordered to keep sufficient personnel available to perform guard duties and any other tasks required in an emergency. Special instructions to tactical units emphasized the need for operational readiness: not only were aircraft to be dispersed so as to minimize the effects of an aerial attack, but crews for all aircraft in commission were to be placed on "two-hour readiness" call day and night. The 19th Bombardment Group was ordered to have one squad-

ron prepared at all times for reconnaissance and bombing missions, while the 24th Pursuit Group was to keep a three-plane flight from each squadron on the alert from daybreak until dark. These orders were in effect by 10 November.⁹⁴

Five days later, all pursuit aircraft were placed on constant alert, fully armed, and with pilots on thirty-minute call. Except for the 34th Squadron, at Del Carmen Field, all pursuit squadrons were completely equipped with P-40's by the end of November. The 17th and 21st Squadrons at Nichols Field and the 3d at Iba had P-40E's, but the 20th at Clark Field still had obsolescent P-40B's. In addition to the American units, the 6th Squadron of the Philippine army was equipped with outmoded P-26's and was based at Batangas. Two other fields, Nielson and Rosales, were available for pursuit operations, while O'Donnell, San Fernando, and Ternate fields were under construction. All the airfields were located on Luzon, radiating out from the focal points of Manila and the island fortress of Corregidor at the entrance to Manila Bay.⁹⁵

Despite the modern equipment of most of the pursuit squadrons and their apparent readiness for action, the total system of air defense in the Philippines had not reached a satisfactory stage. Both the aircraft warning service and the antiaircraft defenses were sadly inadequate, although new items of equipment were en route from the United States. Without sufficient warning of a hostile air attack, the pursuit forces would be unable to take to the air in time to intercept the enemy; yet the status of the aircraft warning system pointed to just such an eventuality. In the absence of radar equipment, General MacArthur had established a rudimentary system which depended mainly upon native air watchers posted at strategic points. The watchers were instructed to transmit their observations by telephone or telegraph to headquarters of the V Interceptor Command at Nielson Field; from this point the information would be relayed by teletype to a plotting board at Clark Field. Although seven radar sets had reached the Philippines by the first week in December, only two—one at Iba and another outside Manila—were in operation at the time of the Japanese attack. Officials in the Philippines as well as at AAF Headquarters were greatly concerned over the absence of trained aircraft warning units and the lack of highly developed radar equipment which would reveal the altitude and course of approaching aircraft. Remedial action was begun in November with organization of an aircraft warning

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battalion for transfer to the Far East Air Force; but the action came too late to be of assistance in defense of the Philippines.⁹⁶

A lack of antiaircraft artillery defenses made it appear all the more unlikely that any hostile air attacks could be halted before military and civil installations had been seriously damaged. Most of the three-inch guns were clustered around Manila harbor, while a limited store of additional three-inch and 37-mm. guns were stored in the Philippine Ordnance Depot. Except for Clark Field, where the 200th Coast Artillery (AA) was stationed, all airfields and other vital points were virtually without antiaircraft protection. Early in November Maj. Gen. J.A. Green, Chief of Coast Artillery, had suggested that part of the harbor defense regiment be reassigned to antiaircraft defense of airfields and other similarly critical areas, and plans for a greatly expanded air force had required attention to problems of defense in the Visayas and Mindanao. Prior to the war, however, little progress had been made, and both General Brereton and General Green were much concerned over the safety of grounded aircraft in the event of an early outbreak of hostilities. Even the Manila area was inadequately protected. For three-inch shells, only low-altitude powder-train fuzes were available, and there were few automatic weapons.⁹⁷

In view of the relatively weak air defenses, the importance of dispersal areas for heavy bombers became paramount. Yet the number of fields suitable for the purpose was far below the number needed. An airfield construction program, which included the extension and improvement of existing fields as well as the preparation of new ones, had been adjusted to the expanding requirements of the air force, but it progressed much too slowly to meet with the satisfaction of air commanders. Only Clark Field, with two large hangars, a limited dispersal area, blast pens, and barracks, could be considered reasonably complete; and its vulnerability was a major cause of concern to General Brereton and his staff. In mid-November attempts were made by air force officials to acquire construction equipment for building dispersal pens at Clark, but the efforts came to naught.⁹⁸

Of chief significance in the development of a building program was the decision to establish a heavy bomber base on Mindanao, southernmost of the large islands in the Philippines. This decision was in accordance with recommendations made by General Brereton's staff during his absence in mid-November on a trip to Australia. Objections were raised because the war plan for the Philippines did not provide

ground forces for defense of Mindanao, but the natural advantages of a soil that lent itself to rapid development of all-weather strips provided an argument which prevailed over the preference of general headquarters for a more northern and presumably more secure location. Accordingly, authority was granted to establish a temporary base at Del Monte, where one runway suitable for heavy bombers had existed for some months, pending a "definite location of the Bomber Command" in the Visayan islands.⁹⁹ In another hurried decision the 5th Air Base Group, which had arrived in Luzon on 20 November, was selected to develop the new base under the direction of Maj. Ray T. Elsmore. Within one week, boats were procured, equipment and supplies were loaded, and the 500-mile voyage from Manila was completed by the air base group. Native labor and local commercial companies assisted in rushing completion of minimum facilities, but no more than the bare minimum had been provided when the first B-17's moved down from Clark on 5 December. Only one radio capable of communication between Mindanao and Luzon had been set up, and maintenance facilities were practically nonexistent.¹⁰⁰

The incompleteness of these preparations at Del Monte governed the decision on movement of the heavy bombers from Clark Field. On 4 December, General Brereton directed that immediate steps be taken to move two squadrons with their sixteen B-17's, plus a limited number of B-18's for use as air transport, to Del Monte under a plan to have the bombers stage through Clark Field for operations in the event of hostilities. Though he shared the common concern over the vulnerability of the bombers at Clark Field, this initial movement was limited to two squadrons because of the anticipated early arrival of the 7th Bombardment Group (H) and a plan to base that entire group on Del Monte.* Its ground echelon was already en route between Hawaii

* According to published accounts (see Frazier Hunt, *MacArthur and the War Against Japan* [New York, 1944], pp. 30-31; Herbert Asbury and Frank Gervasi, "MacArthur—The Story of a Great American Soldier," *Colliers*, 21 July 1945, and its condensation in the *Reader's Digest* for January 1946) since confirmed by General MacArthur (see statement of 27 September 1946, *New York Times*, 28 September 1946), General Brereton was ordered prior to 8 December 1941 to move all B-17's to Del Monte. In response to a question on this point by the AAF Historical Office, General Brereton indicated that the initiative for the transfer came from his own staff and stated that "approval for the movement of the 16 Flying Fortresses to Del Monte was obtained from General Sutherland only with the understanding that they would be returned to airfields to be constructed on Cebu and Luzon as soon as the necessary operating facilities could be prepared." (See 1st ind., Brereton to Paul [ltr., Chief, AAF Historical Office to CG, Third Air Force, sub.: Air Defense of the Philippine Islands in December 1941, 30 Jan. 1946].) General Brereton's recollection fits so

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and the Philippines, having left Honolulu on 29 November in a convoy bearing substantial reinforcement and equipment for General MacArthur's command. Movement of the air echelon had been scheduled for the first week in December, and it actually began on the evening of the 6th when planes of the 38th and 88th Reconnaissance Squadrons took off from Hamilton Field in California for Hickam with instructions to push through to the Philippines as quickly as possible.¹⁰¹ At Del Monte the 14th and 93d Squadrons of the 19th Group, commanded respectively by Maj. Emmett O'Donnell, Jr., and Maj. Cecil Combs, had come in from Clark on the 5th. Dispersal and camouflage of the bombers proved difficult, for there was no natural cover near the field. The one available spray gun was put to work night and day to change the shining silver color of the planes to an olive drab. Huge quantities of coconut leaves were hauled to the field by trucks obtained from a local plantation, for camouflage of the dispersed planes on the ground. Ten truckloads of leaves were required to cover effectively one B-17.¹⁰²

During the final days of November, preparations in the Philippines had been hastened by the knowledge of increased Japanese activity in the western Pacific. Intelligence from British sources late in October had warned of the presence of two Japanese aircraft carriers in the mandated islands. Within a few weeks American commanders learned from another warning that Japanese planes had been detected flying over British territory, perhaps photographing some of the Gilbert Islands. British officials in Singapore suggested that the associated powers send their own aircraft to photograph all the Japanese-mandated islands, the coast line of French Indo-China, and other areas occupied by Japan. The War Department, promptly approving the idea, notified General MacArthur on 26 November that two B-24's equipped for high-altitude photography would depart for the Philippines within forty-eight hours. The crews were to fly at high altitude and to avoid Japanese planes, but they were to "use every possible means of self-preservation" if attacked by any aircraft. The specific mission of the B-24's was to photograph Jaluit in the Marshalls and Truk in the Carolines, and to obtain as much information as possible on the location and strength of military and naval installations. Gen-

closely with readily established facts regarding the state of preparations at Del Monte and the anticipated movement of the 7th Group that it has been used as the basis of the account given here.

eral Brereton notified officials of the Royal Australian Air Force at Port Moresby to expect the arrival of the B-24's, while General Short in Hawaii was given details of the mission by the War Department. For a while it appeared that American forces in the Pacific would soon have firsthand information and photographs of Japanese naval concentrations, but the B-24's were delayed in departing from the United States. Within a few days the War Department expressed fear that the mission was impracticable because of the distance to be flown. The mission was not canceled, however, and one of the B-24's on 5 December reached Hawaii, where it was decided to hold it until "satisfactorily armed." From the first there had been difficulty in securing and equipping the planes for the mission, and at the outbreak of hostilities the second plane had not yet left the United States.¹⁰³

In the meantime, American commanders in the Pacific had received definite warning of an impending break in Japanese-American relations. The War Department on 27 November sent a message, regarded as a "final alert,"¹⁰⁴ to Army commanding officers in the Philippines, Hawaii, Panama, and the Western Defense Command, which included Alaska, warning them:

Negotiations with Japan appear to be terminated to all practical purposes with only the barest possibilities that the Japanese government might come back and offer to continue. Japanese future action unpredictable but hostile action possible at any moment. If hostilities cannot, repeat cannot, be avoided the United States desires that Japan commit the first overt act. This policy should not, repeat not, be construed as restricting you to a course of action that might jeopardize your defense. Prior to hostile Japanese action you are directed to undertake such reconnaissance and other measures as you deem necessary but these measures should be carried out so as not, repeat not, to alarm civil population or disclose intent. Report measures taken. Should hostilities occur you will carry out the tasks assigned in RAINBOW 5 so far as they pertain to Japan. Limit dissemination of this highly secret information to minimum essential officers.¹⁰⁵

The message to General MacArthur did not include reference to alarm of the civil population.¹⁰⁶

Army and Navy commanders in the Philippines immediately conferred with U.S. High Commissioner Francis B. Sayre. On 28 November, General MacArthur reported that everything was being put in readiness for a successful defense, measures having been taken, among other things, to extend and intensify reconnaissance patrols. Within twenty-four hours thereafter, Army forces in the Philippines were placed upon war alert, all leaves were canceled, and two in-

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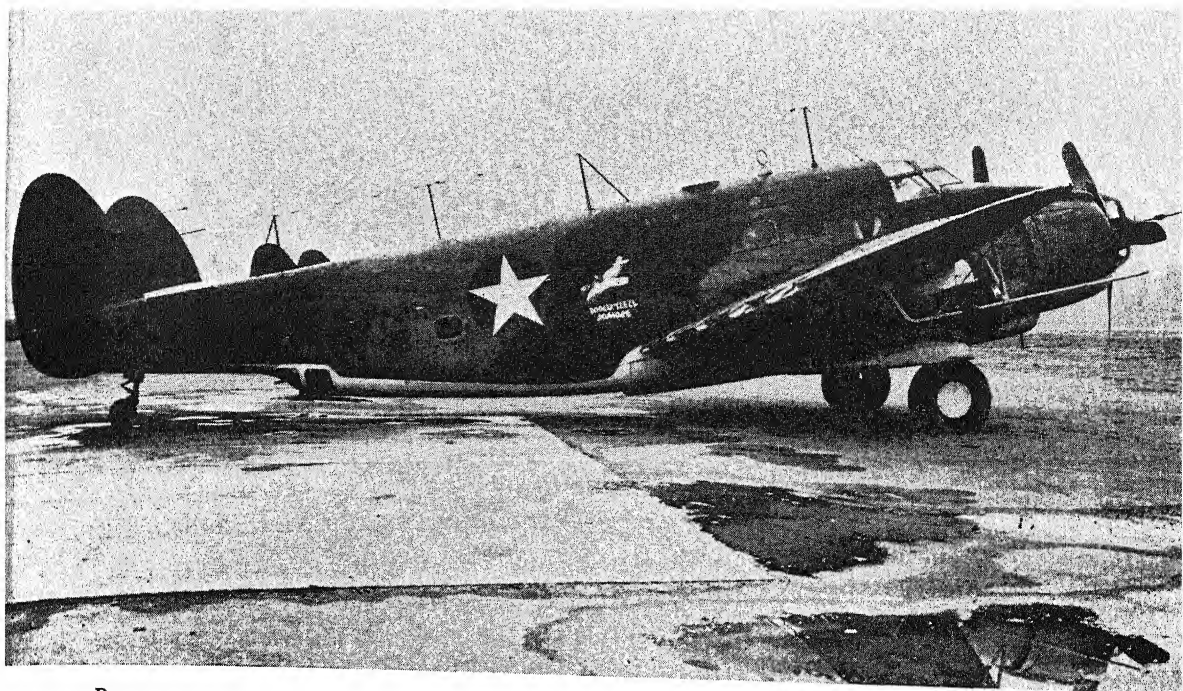
fantry divisions were dispatched to positions around Lingayen Gulf and two more to positions along the Batangas coast. Long-standing differences between the Army and Navy over jurisdictional control of offshore patrol had brought some delay in effecting a desirable coordination of the reconnaissance activities of Patwing 10's PBY's and FEAF's B-17's,¹⁰⁷ but by 1 December, General MacArthur and Adm. Thomas C. Hart, having consulted with their air commanders, had reached an agreement for co-operative air patrols. Because of the greater speed and higher ceiling of the B-17, it was felt that the Army heavy bomber would be more suitable than the PBY for any engagements with Japanese fighters based on Formosa. The commanders therefore agreed that B-17's would patrol the northern area including Formosa, but the possibility of combat was lessened when General MacArthur ordered that the bombers keep a legal distance from the island. Southern waters were to be patrolled by Navy planes, which were authorized to carry out long-range missions as far as the Indo-China coast. These prewar patrol flights revealed large numbers of Japanese transport and cargo ships in harbors and at sea, confirming the general assumption that some major move was afoot. Japanese aircraft were also noted in flight, but no American planes were attacked.¹⁰⁸

The Japanese themselves had undertaken reconnaissance flights over Luzon from Formosa during the last week of November.¹⁰⁹ Apparently the Americans had no indication of this activity prior to 2 December, when a "hostile" aircraft was sighted over Clark Field at approximately 0530 hours. Pursuit pilots of the Far East Air Force, currently engaged in an intensified program of training in problems of interception and gunnery, received orders to intercept any such plane thereafter. During each of the next three nights a plane was detected, but attempts at interception failed. On the fifth morning, antiaircraft batteries maintained an alert while pursuit forces remained on the ground. The radar set at Iba tracked several aircraft, but no plane appeared over Clark Field.¹¹⁰ By that date, 6 December, General MacArthur had established a final alert. All stations were manned and the number of guards increased, special precautions had been taken against subversive activities, and all aircraft were dispersed as best they could be, each under guard.¹¹¹

The program of Philippine air reinforcement, which had rapidly gained momentum during October and November, was far from com-

plete. Out of a projected 240 modern pursuit planes for the Far East Air Force, only 107 P-40's had arrived; and instead of the planned total of 165 modern heavy bombers, the air force had 35 B-17C's and D's. The 27th Bombardment Group, which had been in the Philippines since 20 November, was still awaiting the arrival of its 52 A-24's, which were en route in a convoy of seven vessels escorted by the USS *Pensacola*.¹¹² The ships were loaded to capacity with materiel and troops for General MacArthur's command. In addition to the A-24's, the vessels carried 18 P-40's and much heavy equipment, supplies, and fuel, including 340 motor vehicles, four dozen 75-mm. guns, more than 3,500,000 rounds of ammunition, over 600 tons of bombs, and 9,000 drums of aviation fuel. Approximately 2,500 officers and men of the AAF, including the ground echelon of the 7th Bombardment Group, and some 2,000 additional troops, including 2 regiments of field artillery, were on board the vessels. Directed by "higher authority" to take a southwest course instead of the normal course through the Japanese-mandated islands, the convoy had swung south from Honolulu after the last ship joined the group on 29 November. On 6 December, after crossing the equator, the convoy was still a considerable distance from its destination.¹¹³ Farther north, at approximately 500 miles out from San Francisco, the *Garfield* and *Johnson* were en route to the Philippines with the remaining squadrons of the 35th Pursuit Group and a number of other units and stores of supplies and equipment.¹¹⁴ On the same day, 6 December, the 557th Aircraft Warning Battalion arrived at the San Francisco port of embarkation for shipment to the Philippines. But the course of events did not allow any of these reinforcements to reach their original destination.

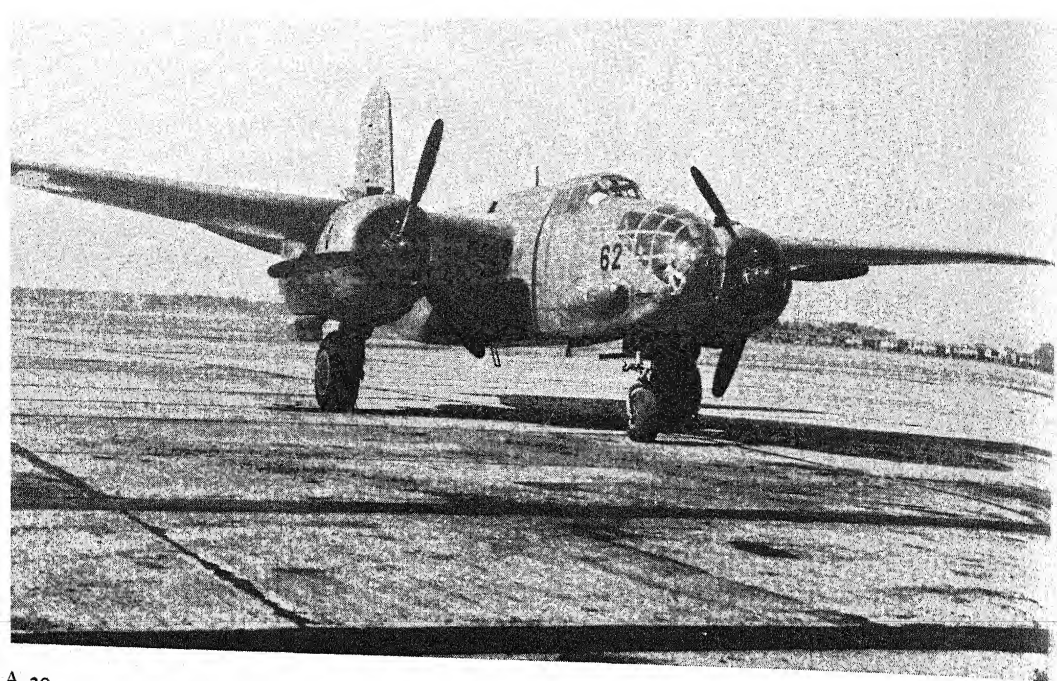
From Hawaii on 6 December General Short sent a message of reassurance to General Arnold regarding preparations along the South Pacific air route, declaring that "we are striving very hard to make good our promise of having one runway at all fields so that we can use the route by 15 January."¹¹⁵ Work was proceeding at an accelerated rate on Canton, Christmas, Suva in the Fiji Islands, and New Caledonia; and inasmuch as no hop was greater than 1,250 statute miles, General Short felt that upon completion the route would be satisfactory for medium as well as heavy bombers, a point that had become a matter of concern by the first week in December. To the problem of early completion there now had been added a new concern for the



B-34

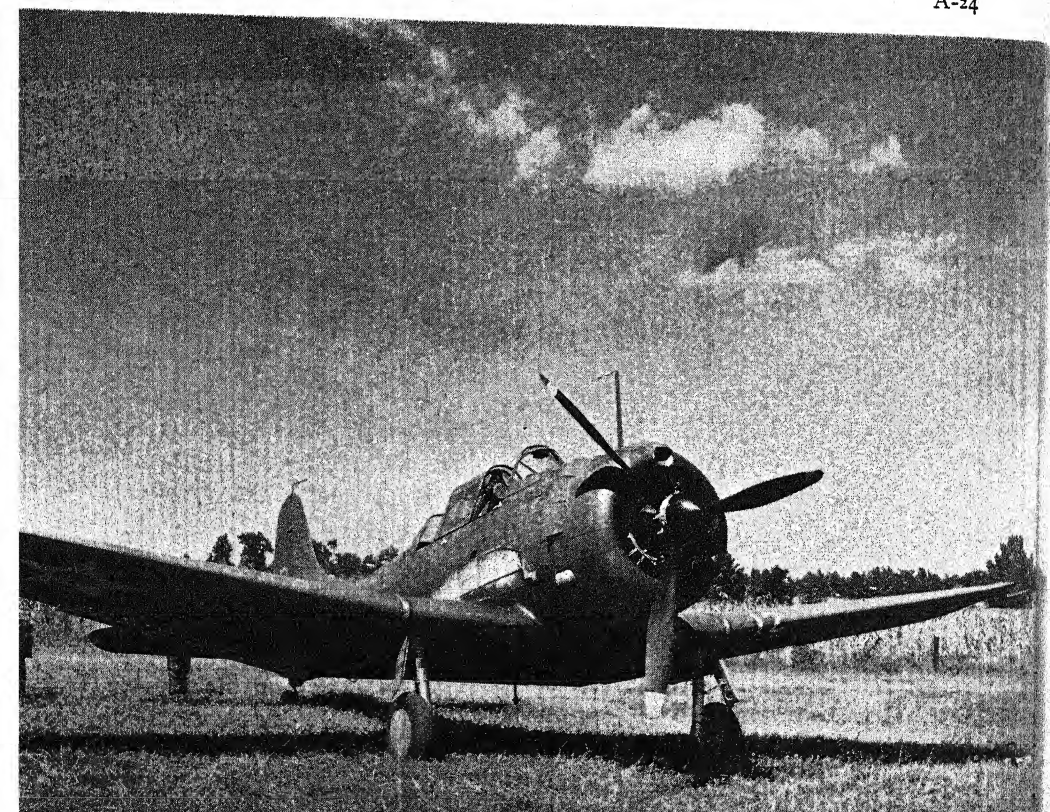
P-36





A-20

A-24



security of the route; for the islands in the South Pacific were virtually defenseless, and the lack of troops for permanent garrisons meant that slim forces had to be shifted from posts in the Hawaiian Islands. General Short was preparing garrisons of approximately 144 officers and men for shipment to Canton and Christmas, but they were not scheduled to sail until mid-December. Pending their arrival, the defense of the island bases would have to be provided by construction personnel, whose hands already were more than full. In the effort to extend air route facilities from Australia to the Philippines, General MacArthur's representatives had surveyed a route that could be used for the ferrying of pursuit aircraft.¹¹⁶ Given time, the prospects for speedy reinforcement of the Philippines by air were promising, but obviously time was running out.

On 1 December, General Arnold had written to the commander of the Hawaiian Air Force: "We must get every B-17 available to the Philippines as soon as possible."¹¹⁷ And on 6 December he arrived at Hamilton Field for a personal inspection of preparations for the air movement of the 38th and 88th Reconnaissance Squadrons to Hawaii on the first leg of a flight to Mindanao. That evening, thirteen B-17's of the two squadrons took off from Hamilton and headed for Oahu, where they were scheduled to arrive on the morning of 7 December.¹¹⁸

The eve of hostilities thus found no slackening in efforts to reinforce the Philippines. AAF planes deployed outside the continental United States had reached a total of 913 aircraft—636 pursuit planes and 61 heavy, 157 medium, and 59 light bombers—and they were divided among Newfoundland, Greenland, Iceland, Panama, Puerto Rico, Trinidad, the Virgin Islands, British Guiana, the Windward and Leeward islands, Alaska, Hawaii, and the Philippines.¹¹⁹ But the overseas deployment which had begun with an emphasis toward Europe was now focused on the western Pacific.

CHAPTER 6

* * * * *

PEARL HARBOR AND CLARK FIELD

AT 1405 on 7 December the Japanese emissaries Nomura and Kurusu arrived at the State Department in Washington. By orders from Tokyo they had originally arranged the appointment for 1300 but had subsequently requested the postponement. Fifteen minutes later they presented to Secretary of State Cordell Hull a memorandum which concluded with the regret that the Japanese government considered it "impossible to reach an agreement through further negotiations." The hour's delay in the meeting—explained by the Japanese as having been consumed in decoding the Tokyo message—rendered that conclusion a masterpiece of understatement. Half an hour earlier Japanese aircraft had attacked naval and military installations in Oahu.

The attack achieved perfect tactical surprise: neither the exact day nor the location of the initial Japanese blow had been correctly estimated. But that Japan would strike soon and probably without a previous declaration of war had for some time been appreciated both in Washington and in the Pacific. After the diplomatic impasse of 20-26 November, war had seemed inevitable; Mr. Hull had told the President's War Council that the matter of safeguarding our national security was in the hands of the Army and the Navy.¹ It was this estimate of the situation which had caused the Army, and the Navy, to send to commanders in Hawaii and the Philippines the warning messages of 27 November described in the previous chapter.*

Because of the overwhelming success of the Japanese attacks of 7 December and of the handicap imposed thereby upon American defense forces, the events of that day and of the preceding weeks

* See above, p. 190.

have been the subject of repeated official investigations. The professional reputations of the highest civil and military leaders have been at stake, and the chief emphasis of the investigations has been to fix responsibilities for our defeat—and indeed, for the very war itself. Thus political considerations have often transcended in importance a mere recital of the sequence of military events; “ultimatums” and “magic” and “wind messages” and “war-warning messages” have loomed larger in the reports than the desperate but futile efforts of Army and Navy personnel in Hawaii, and our initial defeat in the Philippines has come in for little attention. For want of sufficient precise contemporary evidence and because of conflicting statements subsequently furnished by responsible officers, a few crucial points have never been satisfactorily explained.

The general pattern of events in Oahu and Luzon can, however, be established, and that is the purpose of this chapter. Happily, there is no need here to attempt more. The diplomatic and political issues which brought on the war are clearly out of the ken of the AAF historian. And because the chain of command in both Pacific areas and in Washington vested ultimate control of Army Air Forces in Army commanding generals, the graver responsibilities lay with the latter. Nothing in the record indicates that the story would have been substantially better had airmen been in full control of their own forces, whatever minor differences that might have meant. Wherever the fault lay, the AAF in Hawaii, and the fleet whose defense was its chief mission, suffered an overwhelming defeat.

Defeat on Oahu

On 26 November a Japanese task force sailed from Hitakappu Bay in the Kurils. The force included, in addition to its train, six aircraft carriers, two battleships, two cruisers, nine destroyers, and three submarines. They reached position approximately 200 miles north of Oahu before dawn on 7 December (Hawaiian time).²

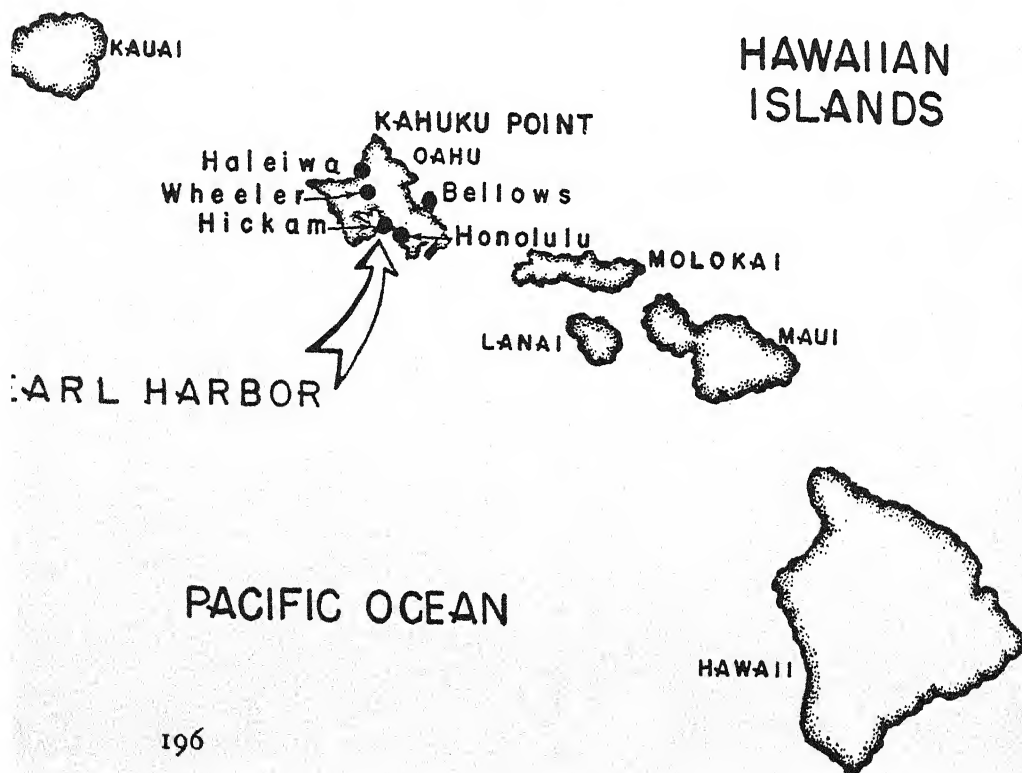
Plans for the strike had been initiated during the previous summer, completed by early November. In September picked crews—with pilots who averaged better than 800 hours' flying time—from the Japanese First Air Fleet had begun a period of intensive training in horizontal and dive bombing and in the technique of torpedo attack in shallow waters. En route to the rendezvous above Oahu, with the ships under radio silence, the pilots were briefed on their coming

THE ARMY AIR FORCES IN WORLD WAR II

mission. The primary target was the naval base of Pearl Harbor, the design to cripple the Pacific Fleet. It was hoped that at least four aircraft carriers and four battleships could be sunk or rendered useless for a long period. Postwar interrogations of enemy personnel indicate a lack of precise information as to the U.S. naval vessels then at Pearl Harbor, but each pilot received charts marking off definite areas of attack.³

Exactly on schedule, at 0600 on the 7th, orders for the take-off were given. Shortly thereafter the first wave—fifty fighters, fifty horizontal bombers, forty torpedo bombers, and fifty dive bombers—roared off the carriers and headed toward Oahu. Forty-five minutes later fifty horizontal bombers, eighty dive bombers, and forty fighters followed as the second and last wave of attack.⁴

The arrival of the first wave over Oahu was not entirely unheralded. About 0630 a small submarine had been sighted in a restricted zone off Pearl Harbor. By 0650 it had been sunk by the U.S. destroyer *Ward*, whose commander had immediately reported the action to the



watch officer at the naval base and had begun a methodical search of the restricted area. The six radar detector stations of the Hawaiian Interceptor Command had been in operation since 0400; at 0700 they reached the prescribed limit of their regular morning alert. On this occasion, however, the Opana station at Kahuku Point remained open to provide additional instruction for one of the operators. At 0702 the station plotted a group of airplanes at approximately 130 miles, bearing 0° to 3° east of north. This fact was reported by telephone to the information center about fifteen minutes later. Because of the expected arrival of B-17's from the mainland and the probability of search operations by U.S. naval aircraft, an Air Corps officer who was on duty at this time "solely for training and observation" did not consider it necessary to take any action.⁵ Meanwhile the Opana station had tracked the planes toward Oahu and had lost them. Two opportunities for an eleventh-hour reprieve had been forfeited.

At 0755 single-engine planes were observed southeast of the Hickam Field hangar line heading for Pearl Harbor. Almost simultaneously the naval base and Hickam Field came under attack.

For approximately thirty minutes units of the Pacific Fleet were subjected to the savage blows of wave after wave of enemy planes. It is impossible to determine precisely the sequence of the enemy's actions; they included eight attacks delivered by some thirty dive bombers, low-altitude attacks by more than twenty torpedo planes sweeping across the harbor in four waves, and level bombing from about 10,000 feet by perhaps fifteen aircraft. Then came a quarter-hour of comparative quiet. At 0840 horizontal and dive bombers renewed the attack. This action lasted about an hour.⁶ At its end the Navy had suffered a crushing blow.

The battleship force had been most heavily hit. The *Arizona*, *California*, and *West Virginia* had been sunk, the *Oklahoma* capsized, the *Nevada* severely damaged, and three others damaged. Three cruisers, three destroyers, and a seaplane tender had received damages of varying degrees of severity; a mine layer and a target ship had been sunk. Fortunately no carrier was in port. Naval and naval air installations had been seriously hurt. Of approximately 169 naval aircraft in the Oahu area, 87 were destroyed. Tragically heavy too were losses in Navy and Marine Corps personnel, with 2,086 officers and men killed or fatally wounded and an additional 749 wounded.⁷

Although the primary purpose of the enemy had been to cripple

the American fleet, it was at the same time necessary for the Japanese to eliminate the danger of an effective reaction from the Hawaiian Air Force. Accordingly, and simultaneously with the initial attack on the fleet, twenty-eight bombers in three waves escorted by pursuits carried out a ten-minute raid on buildings of the Hawaiian Air Depot and the hangar line at Hickam Field. After a fifteen-minute lull, the attack was renewed by five or six high-level bombers which fruitlessly bombed the baseball diamond; six to nine others dropped down to 150 feet for a more damaging attack on the No. 1 Aqua System, the technical buildings immediately behind the hangar lines, the consolidated barracks, and on planes parked almost wing tip to wing tip on the warming-up apron. A third attack at approximately 0900 by from six to nine planes scored hits on technical buildings, dispersed planes, barracks, the parade ground, and the post exchange.⁸

At Wheeler Field, principal pursuit base, the first bombs fell shortly after 0800. Approximately twenty-five dive bombers approached the field at an altitude of about 5,000 feet, went into a dive, and released their bombs over the hangar line. Within a few minutes the air seemed full of planes circling in a counterclockwise direction but otherwise maneuvering according to no apparent pattern. Though this attack lasted for no more than fifteen minutes, other planes strafed the field shortly after 0900. Bellows Field, third of the major Air Corps installations, suffered less than did either Hickam or Wheeler. Only one plane out of the enemy's first wave of attack, and that a fighter, directed its attention to this field. But nine more fighters came over soon after 0900 to give the field a thorough strafing for about fifteen minutes.⁹

In comparison with the havoc wrought by the planes that the Japanese First Air Fleet threw against Hawaiian air and naval installations, the reaction of defending air units was pitiful. The enemy had achieved the crushing advantage of surprise. Moreover, under the alert in effect since 27 November AAF planes were concentrated for protection against sabotage, with an allowance of four hours' notice to make them ready for flight, instead of being dispersed in readiness for a prompt take-off. In the circumstances, it was virtually impossible to put up anything approaching an effective air defense. In spite of handicaps, four P-40's and two P-36's took off from Wheeler Field thirty-five minutes after the initial attack, and from 0830 until 0930 Army pursuit planes flew a total of twenty-five sorties. Perhaps the

most successful interception was performed by six pilots of the 47th Pursuit Squadron based on the small field at Haleiwa, the only usable airfield not subjected to serious enemy attack. Though not at their base when the attack commenced, Lts. Harry M. Brown, Robert J. Rogers, Kenneth A. Taylor, John J. Webster, and George S. Welch succeeded in reaching Haleiwa by automobile and, acting without information as to the number and type of enemy planes, carried out a number of sorties in P-40's and P-36's between 0815 and 1000. Welch alone claimed four enemy planes shot down. Lt. John L. Dains, another pilot participating in the action, alternately used a P-36 and a P-40 in three sorties, but on the third of these he was shot down over Schofield Barracks, apparently by antiaircraft fire. On learning of the attack upon Wheeler, crews of the 44th Pursuit Squadron at Bellows Field began arming their P-40's and by 0855 three were ready. But just as pilots Hans C. Christiansen, George A. Whiteman, and Samuel W. Bishop prepared to take off, Japanese pursuits swept over the field in a strafing attack. Christiansen was killed while getting into his plane; Whiteman was shot down immediately after his take-off; and the other P-40, severely damaged, crashed into the ocean. In spite of a wound in the leg, Bishop succeeded in swimming ashore. At about 0850 four P-36's of the 46th Pursuit Squadron had taken off from Wheeler during a temporary break under orders to proceed to the vicinity of Bellows Field, near which they attacked a formation of nine Japanese planes. In spite of the fact that the P-36's could not match their opponents in rate of climb, two of the enemy were shot down with the loss of one American plane piloted by Lt. Gordon H. Sterling, Jr.¹⁰

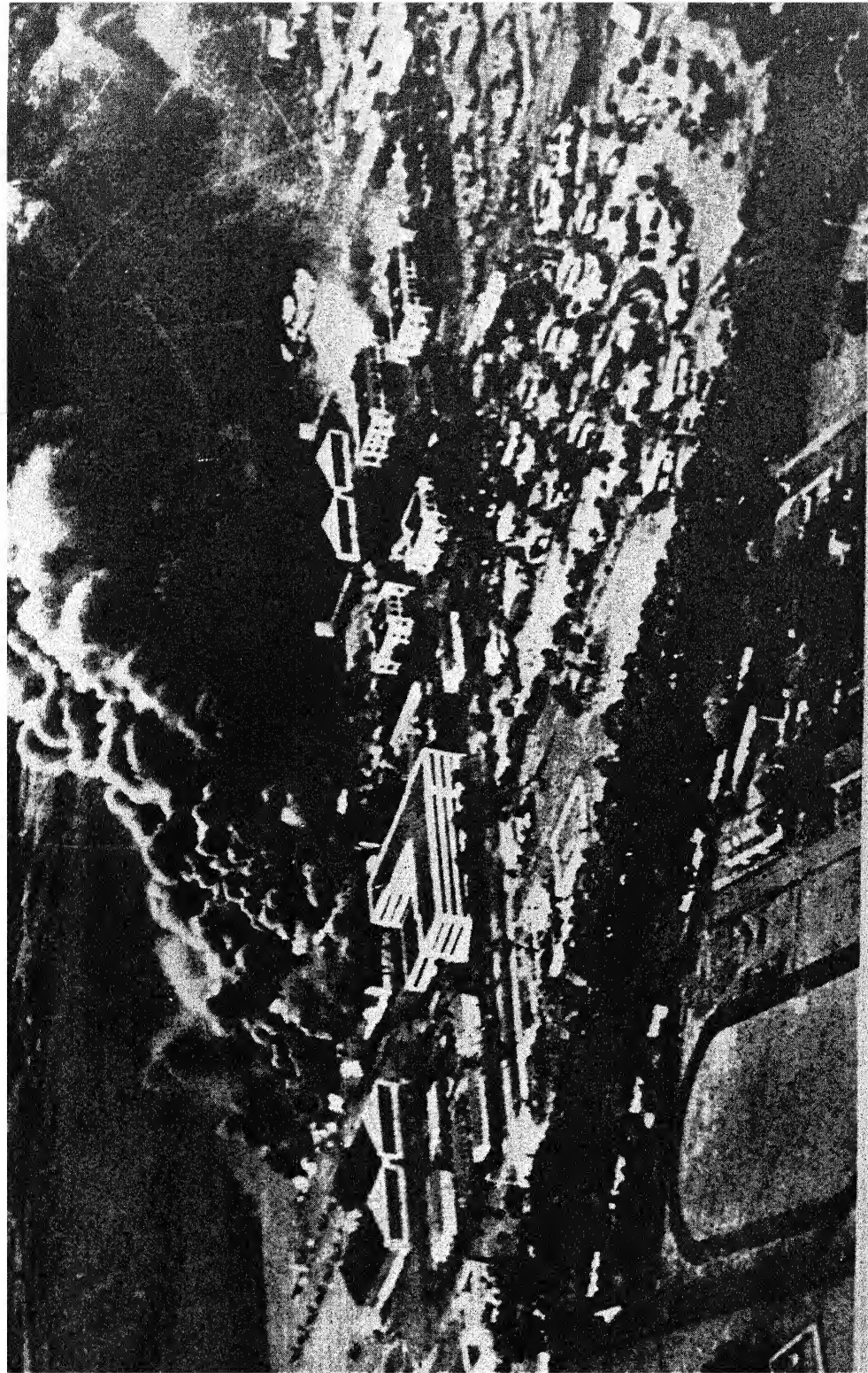
Not until 1100 was it possible for Hawaii-based bombers to get off the ground in a search for the enemy's carriers. But the B-17's of the 38th and 88th Reconnaissance Squadrons, which had left Hamilton Field the preceding evening on the first leg of a flight from the United States to the Philippines,* arrived over Oahu in the midst of the attack. Unfortunately, the planes had been so heavily loaded with gasoline that ammunition could not be carried, and for purposes of balance the armor plate in the rear had been shifted forward. As a consequence, the pilots on reaching Hawaii could attempt no more than to escape from enemy fire. Of the first of two flights, Maj. Richard H. Carmichael, ranking officer of the 88th Squadron, and

* See above, p. 193.

Lt. Harold N. Chaffin brought their planes down on the 1,200-foot runway at Haleiwa; Lts. Harry N. Brandon, David G. Rawls, and Robert E. Thacker flew through antiaircraft and enemy machine-gun fire to land at Hickam; and Lt. Frank P. Bostrom played tag with the enemy almost all the way around the island before landing on a golf course. The second flight, led by Maj. Truman H. Landon of the 38th Squadron, fortunately arrived during an inactive period in the attack, but one of the B-17's was badly shot up and two of its crew members were seriously injured. Considering the fact that the planes were entirely unarmed, had just completed a flight of more than 2,000 miles, and were forced to land either on inadequate or pock-marked fields, the bombers suffered surprisingly little damage. A final accounting showed that of the fourteen planes which left Hamilton Field, two had turned back early in the flight, and of the remaining twelve which reached Hawaii, one had been destroyed and three badly damaged.¹¹

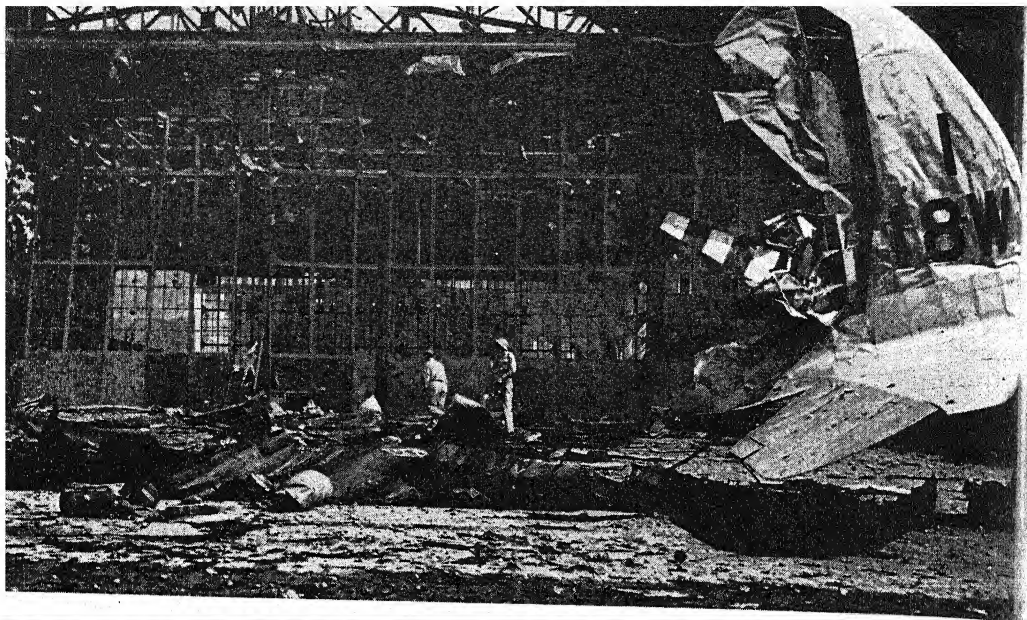
Throughout the remainder of the day, P-40's, P-36's, O-47's, A-20's, B-17's, and B-18's continued a fruitless search for the enemy's carriers, flying a total of forty-eight sorties between 0930 and 1520. The aircraft warning system had been put back into operation shortly after 0800, but could provide no assistance in this effort.¹² Apparently the course of the invaders plotted earlier in the morning was not utilized as a clue to the probable location of the carriers.¹³ The Japanese fleet had come and gone unseen by American patrol and reconnaissance aircraft.

It is now known from enemy sources that Japanese flyers of the first attack wave had returned to their carriers by noon, and that within two hours thereafter all but twenty-nine of the planes sent out against Hawaii had found their way back. But as the day advanced the sea had roughened, and approximately fifty planes were smashed in landing, with twenty or more representing a total loss.¹⁴ This was a small price to pay for the damage done to the Americans. In addition to the losses suffered by the United States Navy, 64 of the 231 aircraft assigned to the Hawaiian Air Force as of 7 December 1941 had been destroyed, and no more than 79 of the remaining planes were reported as usable.¹⁵ At Hickam Field some of the more important administrative and engineering files, the base parachute section, and the overhaul and assembly sections of the Engine Repair Branch had been wiped out. Test equipment, about 75 per cent of the equipment of the



(下段左側) 堀行飛軍陸一ライイ木の下雄猛 第西イリ

JAPANESE PHOTOGRAPH OF WHEELER FIELD, 7 DECEMBER 1941



HICKAM FIELD

IMPROVED MACHINE GUN NEST, HICKAM FIELD



Aero Repair Branch, and more than half of the depot property stocks were destroyed. AAF casualties, especially at Hickam Field, were heavy, reaching a total of 163 killed, 43 missing, and 336 wounded.¹⁶

A tentative plan to strike at Midway on the return voyage was abandoned by the Japanese because of the unfavorable weather. Except for two carriers dispatched for participation in the attack on Wake, the enemy fleet returned to the Inland Sea of Japan.¹⁷ Japanese officials interviewed after the war indicated that they had at no time contemplated a landing in Hawaii. Nor apparently was the capture of Midway included in their original plans. The major Japanese drive, as had been anticipated by the associated powers, would be directed against the Netherlands East Indies and the Malay Peninsula, and in its course would absorb the American-held Philippine Islands. That drive would not be impeded by the fleet based at Pearl Harbor. The enemy's victory had been perfect as few military operations are. Its early consequences were to follow closely enough Japanese hopes.

Defeat on Luzon

According to the Japanese plan for the capture of the Philippine Islands, naval air units would assume the initial responsibility for destruction of defending air and naval forces and for cover of the landings. When beachheads had been established and Philippine airfields had been captured, army air units would move in for the purpose of supporting the ground forces. The first air assault was scheduled for early morning on the same day of the attack in Hawaii.¹⁸

Preparations had been well under way by the opening of November. During the first two weeks of the month, land-based naval air units of the 11th Air Fleet were transferred to Formosa, where with approximately 300 planes they entered into intensive training in day and night bombing, long-range reconnaissance, air coverage, and strafing attack. As December came in, the Third Fleet was engaged in assembling its main forces at Formosa for the amphibious invasion of the Philippines; and to the naval air strength deployed at Formosan bases were added 150 to 175 planes of the Fifth Army air force. The main weight of army aviation was deployed in the south for support, initially from Indo-Chinese bases, of the conquest of Malaya.¹⁹

For defense of the Philippines the Far East Air Force had in commission thirty-three B-17's, of which sixteen were at Del Monte and the rest at Clark Field, and approximately ninety pursuit aircraft.²⁰

JTH
INA
EA

SEA



Major Air Installation
Airfields
Naval Bases
Naval Bases

The 3d Pursuit Squadron at Iba and the 17th at Nichols each had eighteen P-40E's; the 20th at Clark was equipped with the same number of P-40B's. The 21st and 34th Squadrons, respectively based on the Nichols and Del Carmen fields, had arrived in the Philippines only in late November and did not receive their planes until 7 December, when the former was assigned approximately eighteen hastily assembled P-40E's and the latter took up its duties with P-35's, each of which had an average flying time close to 500 hours. Also available were a miscellaneous assortment of noncombat aircraft and twelve P-26's flown from Batangas by pilots of the Philippine Air Force.²¹

Had the Japanese been able to keep to their schedule, the attack on the Philippines would have coincided much more closely than it did with that at Pearl Harbor. But inclement weather above Luzon delayed execution of the plan for an early morning attack, and gave the Americans advance notice of several hours.²² In fact, the major attack on Clark Field, where virtually half of our total bombing force was destroyed on the ground, did not develop until after noon, some nine hours following the initial bombing of Oahu.

In the Philippines, which lie on the other side of the international date line, it was Monday, 8 December, when shortly after 0300 (0830 in Hawaii) a commercial radio station picked up a report of the Pearl Harbor attack.²³ Though no official confirmation was immediately available, base commanders received prompt notification and all units were placed on combat alert. Within thirty minutes of this first warning, the radar set at Iba plotted a formation of aircraft about seventy-five miles offshore headed toward Corregidor. The 3d Pursuit Squadron immediately sent out planes for interception. As the radar followed the course of the outgoing P-40's, it showed them making contact with the approaching aircraft, after which the latter swung off to the west and their plots disappeared. It was later learned that our pursuits actually had made no interception. Apparently, the P-40's in the darkness had passed underneath the enemy planes.²⁴ There were no other alarms prior to receipt of official confirmation of the outbreak of hostilities with Japan by 0500.

A plan of action which had been considered for this eventuality by the Far East Air Force was an American air attack against Formosa, the natural point of concentration for a Japanese invasion of the Philippines.²⁵ Objective folders, although without calibrated bomb target maps or aerial photographs, had been prepared,²⁶ and Col. Francis

M. Brady, chief of staff to General Brereton, promptly took the initial step toward mounting the operation by ordering the B-17's at Clark Field prepared for the mission.²⁷ Brereton himself reported at about 0500 to General MacArthur's headquarters at Fort Santiago, where he requested permission of Brig. Gen. Richard K. Sutherland, chief of staff, to carry out offensive action as soon as possible after daylight.²⁸

That request, unhappily, has become a subject of controversy. Conflicting statements have been made and the historian is left to find his way without the aid of a complete record. Indeed, only a few fragments of the official records of the Far East Air Force survived the initial engagements and movements of the war, with the result that chief reliance must be placed on the recollections of its personnel. It would appear that the files of General Headquarters, Southwest Pacific Area, are also incomplete.²⁹

Since the question turns so largely on evidence drawn from the memory that men carry of the first hectic hours of war, it seems pertinent to observe here that there can be little doubt that to the airmen of General MacArthur's command the logical defensive use of the long-range heavy bomber in the circumstances existing was to strike at the enemy's concentration of air and naval power on Formosa, and to strike before the enemy could attack.³⁰ Not only would this have been in accord with standard AAF doctrine and with the mission in defense of our own shores for which the B-17 originally had been designed, but Formosa lay well within the range of the plane, which incidentally had been built for missions extending beyond the distance for which fighter escort could be provided by current models of pursuit aircraft. It is true that the number of planes available was nowhere near that required for a decisive striking force, but the defensive value of the B-17 lay almost entirely in its offensive power and the alternative to its use in that manner was to save it for possible destruction on the ground. Moreover, the mission presumably would serve useful purposes of reconnaissance, and it would have been in accordance with the recent revision of RAINBOW No. 5.* If General Brereton did not propose an early undertaking of offensive action against the enemy on Formosa, as both officially and publicly he has stated he did, it would be surprising indeed.

Following the publication in 1946 of *The Brereton Diaries*, in which

* See above, pp. 184-85.

PEARL HARBOR AND CLARK FIELD

for the first time General Brereton publicly stated the facts as he recalled them, General MacArthur announced that he had received no such recommendation and that prior to that publication he knew "nothing of such a recommendation having been made." * This statement lent special weight to the testimony of General Sutherland, who during the preceding year had stated in an interview that the responsibility for holding the bombers on the ground that morning was entirely Brereton's.[†] It was Sutherland's recollection that the air commander agreed that there would be no point in attempting a bomber mission without advance reconnaissance. The interview did not indicate whether the question of an immediate reconnaissance mission was considered, but General Brereton, in reply to a request for information on that point, has indicated that no authorization for reconnaissance was received until later. "At the first conference," he wrote, "General Sutherland approved my plans for an attack immediately after daylight, instructed me to go ahead with preparations and that in the meantime, he would obtain General MacArthur's authority for the daylight attack."³¹

* *The Brereton Diaries* (New York, 1946); MacArthur's statement of 27 Sept. 1946, in *New York Times*, 28 Sept. 1946. In response to a request for information, General Brereton several months earlier had given the Historical Office a statement of developments on the first day of war that was substantially the same as that subsequently published. (1st ind., Brereton to Paul [ltr., Chief, AAF Historical Office to CG Third Air Force, sub.: Air Defense of the Philippine Islands in December 1941, 30 Jan. 1946].)

[†] The record of an interview by Walter D. Edmonds with Lt. Gen. Richard K. Sutherland in Manila on 4 June 1945 (copy supplied the author through the courtesy of Mr. Edmonds) reads on the question of "Why was Formosa not bombed?" as follows:

Gen. Sutherland began by saying that all the B-17s had been ordered to Del Monte some days before. On a check it was found that only half had been sent. GHQ wanted the planes in Del Monte because they would there have been safe from initial Jap attacks—they could not have been reached at all—and they could themselves have staged out of Clark Field to bomb Formosa. This direct order had *not been obeyed*. And it must be remembered that GHQ gave out general orders and that the AFHQ were supposed to execute them. As Sutherland recalls, there was some plan to bomb Formosa, but Brereton said that he had to have Photos first. That there was no sense in going up there to bomb without knowing what they were going after. There were some 25 fields on Formosa. On December 9th and 10th, photo missions were dispatched—Carpenter going on the first and returning with generator trouble; Connally going on the second but being turned back by fighters. *Holding the bombers at Clark Field that first day was entirely due to Brereton.* (Italics mine, WDE.)

General Sutherland's statement that all B-17's had been ordered to Del Monte (subsequently confirmed in MacArthur's statement of September 1946) and General Brereton's account of the move have been discussed above in Chap. 5, pp. 188-89. On the immediate question of the employment of the planes at Clark Field on 8 December, the question of a prior order for their transfer is a side issue.

It is difficult even to establish the chronology of events for that morning or to give anything more than the approximate time of those events on which agreement exists. The most detailed general account is that of Brereton, and for much of the detail given by him there exists independent corroboration.³² On the main points at issue, moreover, support for much of his account is provided without complete agreement by a file of the daily Summary of Activities of the Headquarters, Far East Air Force, extending from 8 December 1941 to 24 February 1942, when General Brereton relinquished command in Java on the eve of his departure for India to assume command of American air operations in that area. These daily summaries leave little if any question that they represent a detailed record compiled closer to the events described than any comprehensive account known to exist. In the following narrative they have been weighted accordingly.*

After his early morning report to General Headquarters, General Brereton states that he returned to his own headquarters at Nielson

* These summaries acquire in the absence of other comparable records such an importance as to justify at this point an attempt to describe them and the way in which they reached the files of the Air Historical Office. They were transmitted to that office after the termination of hostilities by AAF historical officers assigned to the China-Burma-India theater. Presumably, they represent a record carried to India by General Brereton or by other FEAF personnel who accompanied him to India, and presumably they were left there at the time of his hurried departure in June 1942 for the Middle East. (See below, pp. 512-13.) Similarly, records of early activity in India reached the Air Historical Office through the efforts of the historical officer of the Ninth Air Force, which General Brereton later commanded in ETO. The FEAF summaries, which are typed out on loose sheets of two different sizes and of varying weight and texture, all of them carbon copies except for the inserted notes of a staff conference held on 19 December, are bound together by an acco fastener within an ordinary manila cover. On the cover has been written in ink, possibly by historical personnel in the theater, "Early History 10th AAF"; but that has been struck out and in its place appears "General Brereton's Headquarters diary 8 Dec 41-24 Feb 42," and below that in pencil is written "Activity Report of FEAF." Other markings were apparently made by the filing personnel of the historical office. The historian is given some pause by the fact that the daily summaries from 8 December through 13 December give the year as 1942 with corrections in ink for 8, 9, and 10 December. The year appears without change as 1941 for 14 December at which point the weight of the paper changes, but reverts thereafter to 1942 until the entries for 16 December. From that date forward the year is rendered correctly in the original typing. Since one often writes by mistake the preceding year but rarely if ever puts down the new year ahead of time, the likelihood that entries for the earlier dates were compiled at some later time must be considered. Perhaps they represent a compilation taken from available records for assistance in the preparation of such a report as is understood to have been made by General Brereton in late January or early February (see note 32); perhaps they are copies made from the original by a careless typist; perhaps there is some other explanation. Whatever the case, the fullness and exactness of detail given, together with the fact that at so many points independent corroboration can be had, lead to the conclusion that the document represents a valuable record compiled closer to the events described than any other known source of comparable scope.

Field under instruction to take no offensive action until so ordered.³³ The Summary of Activities for that date has as its first entry the following notation: "07:15 General Brereton visited No. 1 Victoria and requested permission of General MacArthur to take offensive action. He was informed that for the time being our role was defensive, but to stand by for orders." And at 0900 appears this entry: "In response to query from General Brereton a message received from General Sutherland advising planes not authorized to carry bombs at this time."

The second of these entries is probably to be interpreted in the context of developments occasioned by an impending enemy attack. While air force officers awaited orders, the aircraft warning service had reported enemy aircraft proceeding south over Lingayen Gulf toward Manila.³⁴ All B-17's at Clark Field were ordered into the air without bomb load to avoid being caught on the ground and were instructed to patrol the waters off northern Luzon.³⁵ The 20th Pursuit Squadron, also based at Clark, was dispatched to intercept the approaching formation, and at Nichols Field the 17th, under command of Lt. Boyd Wagner, received orders to cover Clark. At 0910, Col. Harold H. George, chief of staff, V Interceptor Command, reported to headquarters "that there are 54 airplanes in the air and 36 airplanes in reserve and that no contact with hostile aircraft has been made." At 0923, he reported "approximately 24 bi-motored enemy bombers near Tuguegarao and 17 near Baguio." Simultaneously, another report indicated that "Tarlac and Tuguegarao were being bombed." Planes of the 20th Pursuit had expected to make contact with the enemy north of Manila over Rosales, but the Japanese escaped interception by swinging east to direct their main effort against Baguio, summer capital of the Philippines.³⁶

Following this attack, Brereton by telephone renewed his request for authority to take offensive action. According to the Summary of Activities the time was 1000, and the "Chief of Staff informed General Brereton that all aircraft would be held in reserve and that the present attitude is strictly defensive. General Brereton stated to General Sutherland that if Clark Field was taken out we could not operate offensively." To the same entry is appended: "Bomber command recommends bombs not be loaded at this time due to danger of extensive damage by enemy air action." At the same hour but under separate entry appears this brief notation: "24 enemy bombers reported in Cagayan Valley proceeding south in direction Manila."

THE ARMY AIR FORCES IN WORLD WAR II

It is General Brereton's recollection that shortly before 1010 he received authority to undertake a reconnaissance mission to Formosa; that Lt. Col. Eugene L. Eubank, bomber commander, promptly took off from Nielson for Clark Field to assume personal direction of the preparations; that Colonel Eubank on his arrival at Clark recalled the bombers from patrol to prepare for the execution of orders which called for three planes to fly the reconnaissance mission "and the rest to be briefed for an attack"; that, at about 1100, GHQ authorized bombing missions; that he then instructed Eubank to load all available B-17's with 100- and 300-lb. bombs and to brief the crews for attack of airdromes in southwest Formosa; and that he ordered the two squadrons of bombers at Del Monte to move their B-17's at dusk to San Marcelino, a pasture-like emergency field lying near the coast of Luzon west of Clark, whence they were to proceed during the night to Clark Field as a staging point for a mission at daybreak.³⁷ It is with more than ordinary interest, therefore, that one reads the following entries in the daily summary:

10:10 Colonel Eubank left for Clark Field to take charge of operations from Clark Field with instructions to dispatch a photo reconnaissance mission in force at once to southern Taiwan area.

10:14 General Brereton received a telephone call from General MacArthur. General Brereton stated that since the attack was not made on Clark Field that bombers will be held in readiness until receipt of reports from reconnaissance missions. Lacking report of reconnaissance, Taiwan would be attacked in late afternoon. The decision for offensive action was left to General Brereton. All bombers were ordered to arm and be on alert for immediate orders.

10:20 Report of planes coming south proved erroneous. Planes reported coming south from Cagayan Valley turned around and are now proceeding north. The staff was called in and informed of General Brereton's telephone conversation with General MacArthur. General Brereton directed that a plan of employment of our Air Force against known airdromes in Southern Formosa be prepared.

10:45 Employment of Air Force directed by General Brereton as follows: Two (2) heavy bombardment squadrons to attack known airdromes in Southern Formosa at the latest daylight hour today that visibility will permit. Forces to be 2 squadrons of B-17's. Two (2) squadrons of pursuit to be on the alert to cover operations of bombardment. Pursuit to be used to fullest extent to insure safety of bombardment. Two (2) squadrons of bombardment to San Mencilino [*sic*] at dusk. To Clark Field after dark prepared for operations at daybreak.

11:10 Report received from Clark Field that airdrome had not been bombed.

11:20 Field Order No. One, confirming Colonel Eubanks instructions to 19th Bombardment Group sent by teletype.

It required some time to bring in all of the bombers from patrol, but shortly after 1130 all American aircraft in the Philippines, with the exception of one or two planes, were on the ground. Recently recalled B-17's at Clark were being made ready for the Formosa mission;³⁸ planes of the 20th Pursuit Squadron at Clark and of the 17th at Nichols had returned to their bases for refueling; those of the 3d at Iba, the 21st at Nichols, and the 34th at Del Carmen stood ready to take off upon receipt of orders.³⁹ And just about this time the plotting board at Nielson Field began to receive reports of a formation of enemy aircraft coming in over northern Luzon. Unlike other flights reported that morning, this one did not break up as it proceeded south. Warning was sent to Clark Field by normal teletype channels, and according to Col. A.H. Campbell, then chief of Aircraft Warning Service, its receipt there was confirmed.⁴⁰ Back at Nielson, an entry in the Summary of Activities reads: "11:37 Operations Board report flight of enemy planes, number unknown now located about 70 miles west of Lingayen Gulf, headed south 11:27 A.M." As soon as the enemy force was believed to be within operating range of American pursuit planes, Colonel George of V Interceptor Command took necessary steps to provide protection for vital points.⁴¹ For the approaches to Manila, the 17th Squadron was ordered to cover Bataan peninsula, the 21st to patrol the Manila area itself, and the 34th to provide a cover for Clark Field, where the 20th, just in from patrol, was being refueled. The 3d Squadron, at Iba, was dispatched on what proved to be a fruitless flight over the South China Sea, where an enemy formation had been reported.⁴²

From this point on, a confused record reflects chiefly the general confusion and bad luck which attended the American air effort on that first day of hostilities in the Philippines. The Summary of Activities for Headquarters, Far East Air Force, notes: "11:56 General Brereton communicated with General Sutherland and complete report was given General Sutherland of the air situation at this time including fact that it was planned to move the B-17's now at Del Monte to San Marcelino and to bomb Taiwan fields at late afternoon today." Then the summary jumps to 1240 to record a report that "10 planes, 6,000 feet, nationality unknown, headed for Manila. This information from the Navy." Under 1255 appears another report that "large force of planes, about 25, heading south reported in vicinity of Tarlac at 12:25." Under 1257 one reads of a Japanese propaganda mission

earlier in the day: "Said planes dropped leaflets which read as follows: Way to permanent peace causing this conflict between Japan and the U.S. Roosevelt attempt curve our independence stop we all know than unless the US has not oppressed Japan, this war has not been started stop Our mission is to end this war as fast as possible and in order to achieve this end we should cooperate with Japan fully unquote." Then: "13:00 Reported by G-2 that Fort Stotsenburg is being bombed"; and again—"13:00 Report received from Stotsenburg many bombers very high bombed Clark Field at 12:35 P.M."

It is not even certain that the record thus provided clears up the much debated question of just when the Japanese attack on Clark Field began, for there is rather specific evidence which argues for a time some fifteen minutes earlier. No clarification, moreover, is provided for the controversial question of why our bombers were caught, apparently without warning, on the ground. There is reason to believe that a warning message had reached Clark Field, but the warning evidently was not received by bomber personnel there. In response to a specific question from the Air Historical Office which indicated the existence of information that a warning had been sent and acknowledged by Clark Field, General Eubank under date of 5 August 1947 made the following statement:

Information of the Japanese formation which attacked Clark Field about noon, 8 December 1941, was not received by the Bomber Command prior to the attack. The formation was almost directly overhead at the time the air raid warning siren was sounded and the bombs began exploding a few seconds thereafter. One or two false air raid warning messages had been received earlier in the day.⁴³

And there the question must be left. Colonel Campbell is emphatic in his recollection that a prior warning was both sent and acknowledged; General Eubank is equally emphatic in stating that no information reached V Bomber Command. It is entirely possible that both officers are correct in their recollection, but in the absence of further evidence there would appear to be little advantage in attempts to speculate on the probabilities of misinterpretation or other human failure that might reconcile the two accounts.

In any case, the Japanese enjoyed the good fortune of catching the two squadrons of B-17's on the ground at Clark Field. This had been the enemy's hope when he originally scheduled an attack for the early morning, but after a postponement of several hours, he had no reason

to expect anything other than that the Americans would have been completely alerted by the news from Pearl Harbor.⁴⁴ Actually, not only did he find all save one of the Clark Field bombers on the ground, but for the moment the field was almost unguarded by pursuits. A thick haze of dust at Del Carmen had delayed execution of orders to the 34th Squadron for cover of Clark Field, and at 1215 the 20th Pursuit, whose planes had not yet completed their refueling, was hastily ordered to cover its own base. Within five minutes four planes had taken off, but just then, a V-shaped formation of twenty-seven Japanese bombers attacked the field with bombs varying in size from small fragmentation to 100-pounders. Following this formation came another of comparable size, which continued the attack for fifteen minutes. And, almost before the last bomb had been dropped, Japanese fighters swept in to pick out the grounded American planes in a low-altitude strafing attack that lasted more than an hour.⁴⁵ Though every advantage lay with the attacking enemy, desperate attempts were made by the 20th Pursuit Squadron to get its P-40's into the air. Five were smashed by bombs while taking off; five more were destroyed in strafing attacks, but Lt. Joseph H. Moore, squadron commander, succeeded in leading three others into the air. There Lt. Randall B. Keator attacked a flight of three enemy pursuits and acquired the distinction of shooting down the first Japanese aircraft over the Philippines; Lieutenant Moore in a series of dogfights destroyed two others. At Del Carmen Field, some fifteen miles away, pilots of the 34th Squadron, on seeing great clouds of smoke and dust billowing up from Clark, immediately "took to the air" in their P-35's to engage other enemy fighters. The P-35's were consistently outmaneuvered and several of them were seriously damaged, but the pilots claimed on return three of the enemy aircraft.⁴⁶

Two B-17's were off the ground during these attacks. One, piloted by Lt. John Carpenter, was on reconnaissance and landed at Clark after the raiders had disappeared.⁴⁷ Another, commanded by Lt. Earl Tash, had arrived over Clark Field from Del Monte during the height of the low-level strafing to be pounced upon by three enemy pursuits, but Tash managed to pilot the severely damaged B-17 back to Del Monte.⁴⁸

Meanwhile, the planes of the 3d Squadron returning from their search over the South China Sea, where they had found nothing, had run into the worst possible luck. With their fuel dangerously low, the

P-40's, which numbered perhaps twelve, reached their base at Iba just ahead of a heavy enemy attack. The American planes, in fact, were slowly circling the field preparatory to landing when a number of Japanese bombers estimated at from twenty-seven to thirty-four and their fighter escort attacked. The American planes tried to ward off the Japanese attack and succeeded in preventing the low-level strafing which proved so destructive at Clark Field. Lt. Jack Donalson probably destroyed two of the enemy planes, but five P-40's were shot down and three others crash-landed on near-by beaches when their fuel gave out.⁴⁹

On the ground, personnel of the Far East Air Force fought back as best they could in a hopelessly unequal struggle. Though some units almost completely disintegrated during nearly two hours of attack, there were countless examples of outstanding leadership and heroism. With few exceptions, antiaircraft gunners stood by their guns in the face of effective enemy strafing. Ground and combat crews turned the machine guns of grounded planes on low-flying Japanese aircraft, or undertook to rescue from flaming buildings such valuable equipment as they could. Among the many officers and men subsequently cited for their efforts were Lt. Fred Crimmins, who received severe wounds in a vain attempt to save a B-17; Chaplain Joseph F. LaFleur, who repeatedly ignored low-flying strafers to minister to the wounded and dying; Pvt. Robert Andres, who on his own initiative appropriated an abandoned truck to make seven trips with wounded men to the station hospital; and Pfc Greeley B. Williams, who from a gunner's post in one of the B-17's kept up a steady fire on Japanese planes until he was killed. Medical personnel of the four emergency first-aid dressing stations at Clark Field maintained their greatly needed services throughout the time.⁵⁰

As the enemy planes returned to their Formosan bases, it was clear that they had won a tremendous victory. At Clark Field, high-level bombing had destroyed hangars, shops, mess halls, barracks, and supply buildings. The communications center had received a direct hit which cut off the field from other points and prevented any attempt to control pursuit operations. As a result, planes of the 17th and 21st Squadrons continued their assigned patrols of the Bataan and Manila Bay areas, unaware of the Japanese attack being carried out no more than sixty miles away.⁵¹ The B-17's, in spite of being incompletely dispersed, suffered relatively little damage from bombs, but

enemy pursuit pilots had so systematically chosen their targets that seventeen or eighteen of the bombers were destroyed.⁵² Damage at Iba was, if anything, even more severe. Of the 3d Squadron's P-40's, apparently only two escaped destruction. Bombs crashed into barracks and service buildings. Much of the airplane maintenance equipment was lost, and with it the entire radar installation. Ground crews, who had thought the approaching planes friendly, suffered heavily.

A bombing attack on Nichols Field in the early morning of 9 December created still more havoc. Bombs fell on a hangar, damaging several planes and destroying at least one B-18. Several pursuit planes had been ordered off the ground for night patrol, but the inadequacy of night-flying facilities and almost impenetrable dust at the field resulted in the loss of two or three of these planes and one pilot.⁵³

In less than one day of hostilities the strength of the Far East Air Force had been reduced by half. Of its thirty-five B-17's, not more than seventeen remained in commission. About fifty-five of the original P-40's had been lost either in combat or on the ground. Of the P-35's, no more than fifteen were operational, and perhaps twenty-five to thirty miscellaneous aircraft—B-10's, B-18's, and observation planes—also had been destroyed. Casualties were comparably heavy. At Clark Field alone, 55 officers and men had been killed and more than 100 wounded, to which numbers were added approximately 25 killed and 50 wounded at other points.⁵⁴

The War Department had forwarded instructions to General MacArthur to carry out the tasks assigned under RAINBOW No. 5 and to co-operate with the British and Dutch insofar as it was possible without jeopardizing the accomplishment of his primary mission of defending the Philippines.⁵⁵ Bomber losses, however, left little hope of effective offensive action, and comparably heavy losses of pursuit aircraft lent a new desperateness to prospects for defense against an expected enemy invasion. In a move of adjustment to the losses sustained, the remaining aircraft of the hard-hit 3d Pursuit Squadron were divided between Lieutenant Wagner's 17th Squadron, which now was transferred to Clark Field, and the 21st Squadron at Nichols Field. At the same time, personnel of the ground echelon were distributed among these and other units in order to bring them nearer up to strength.⁵⁶ Every effort was made to strengthen antiaircraft defenses, which had proved ineffective against both high-level bombing and low-altitude attacks. The Manila area seemed particularly

vulnerable, and in the early evening of 8 December a machine-gun battery of the 60th Coast Artillery (AA) moved to Nichols Field and the port area of Manila. Additional if limited equipment was available in the Philippine Ordnance Depot, and 500 officers and men were transferred from the 200th Coast Artillery Regiment to man it. Working almost continuously for thirty-six hours, these men, who had been hastily organized into the Provisional 200th CA (AA), put together and installed twelve 3-inch guns, "3 directors and height-finders, 5 AA searchlight units," and twelve 37-mm. AA guns. By 10 December new 3-inch batteries were located at Paranaque, at Paco, and east of Nielson Airport, and 37-mm. batteries had been installed at Nichols Field, at Nielson Airport, and in the section of Manila known as the Walled City.⁵⁷

While these defensive preparations continued and ground crews worked frantically to make every available aircraft ready for operation, the chief responsibility of the air arm was reconnaissance. Though principal reliance was placed in AAF pursuits and Navy patrol bombers, B-17's from Del Monte also participated in the effort to gain intelligence of the enemy's movements and intentions. At 0730 on 9 December, six of the heavy bombers, commanded by Maj. Cecil Combs and loaded each with 20 x 100-lb. demolition bombs, took off from their Mindanao base. Having reconnoitered the area in the vicinity of Catanduanes without finding evidence of enemy activity, they proceeded to Clark Field, where they landed at 1430. In an action which was representative of the desperate conditions now governing operations from bases on Luzon, the planes took off almost immediately and remained in the air until after dark to avoid attack on the ground. During the afternoon, seven additional B-17's were dispatched from Del Monte to San Marcelino.⁵⁸ A relatively respectable striking force had thus been brought into position for resistance to such invasion attempts as might be made. Through the first two days of hostilities, however, reports both from the warning net and from patrol planes revealed principally the confused and nervous state into which our defenses had been thrown by the enemy. As Admiral Hart later reported, "an extraordinary crop of incorrect enemy information" came over the warning net, and there were reports of "enemy sightings when nothing was actually sighted and when a vessel was really seen she was usually reported in one of two categories: irrespective of size, she was either a Transport or a Battleship."⁵⁹ But during the

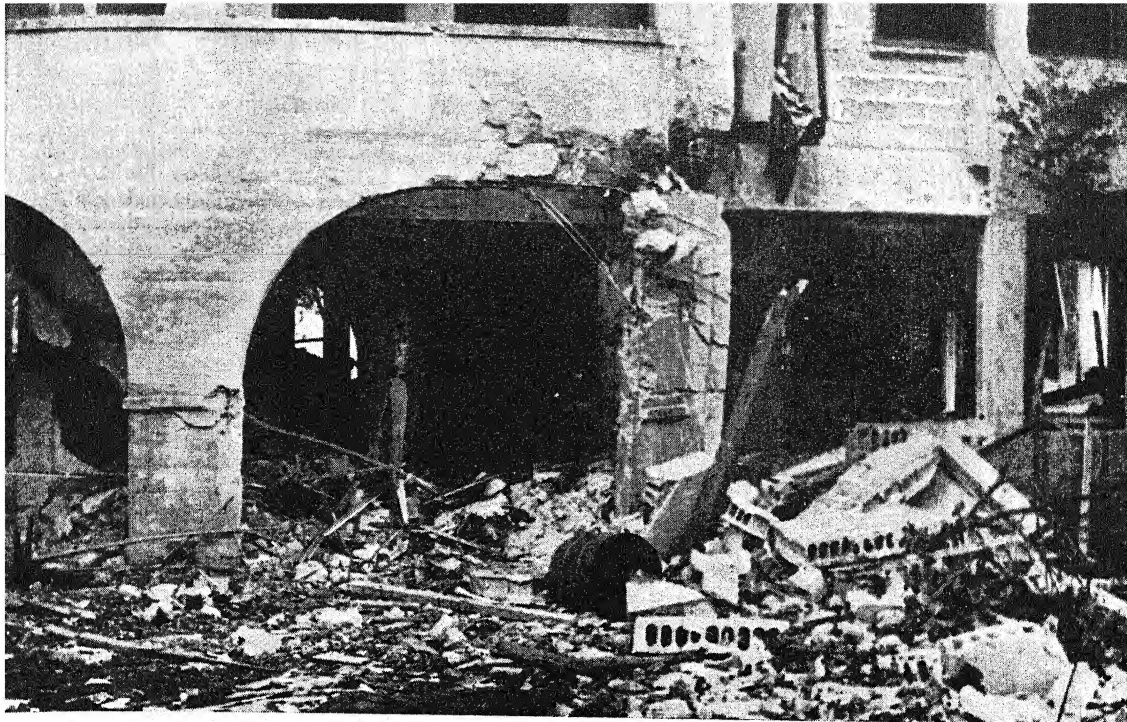
night of 9/10 December, Lt. Grant Mahoney, flying a P-40 on reconnaissance, brought definite warning of approaching convoys.⁶⁰

Units of the Japanese Third Fleet sortied from Formosa early on the morning of 10 December. Their missions were to effect a landing at Aparri in the extreme north of Luzon and another at Vigan on the northwest coast in operations preliminary to the main landing on Lingayen Gulf. For the accomplishment of these objectives, the convoy had been divided into three task forces: one for each landing and a third, which included cruisers, to provide general support as required. Alerted by the approach of these forces, the Far East Air Force determined to oppose the enemy landings as best it could with heavy bombers supported by a strong pursuit escort. Accordingly, five B-17's and the P-40E's of the 17th Pursuit Squadron and the P-35's of the 34th were prepared for an early mission. At 0600 the B-17's, led by Major Combs, took off from Clark Field and, before reaching the target area in the neighborhood of Vigan, were joined by planes of the 17th Squadron. The B-17's, each loaded with 20 x 100-lb. demolition bombs, chose a number of transports already engaged in unloading troops and supplies. Two bomb runs were carried out by four bombers from an altitude of 12,000 and 12,500 feet, respectively. The fifth B-17, piloted by Lt. Elliott Vandevanter, Jr., swept in first at 10,000 and then at 7,000 feet. Though antiaircraft fire remained fierce at the completion of the bombing, the P-40's came down for a strafing attack on the ships and on the Japanese who had already reached shore. Meanwhile, the slower P-35's of the 34th Squadron had arrived on the scene of action. These almost obsolete planes had neither armor protection nor leak-proof tanks, but they too "strafed and restrafed the invaders." As Lt. Samuel H. Marrett, squadron commander, led his flight in "one final and successful strafing dive," one of the transports exploded, destroying both Marrett and his plane. Another P-35 was lost, but the pilot escaped.⁶¹ Though the B-17's had succeeded in scoring a number of hits, this one vessel apparently represented the only major loss by the enemy.⁶²

Another mission scheduled for Maj. Emmett O'Donnell's 14th Squadron had been delayed by the necessity of flying from San Marcelino to Clark for refueling and bomb-loading, and then had been further delayed by a warning of approaching Japanese planes. Finally, five B-17's, having been made ready, took off individually. Three of them, piloted by Major O'Donnell, Capt. E.L. Parsel, and Lt. G.R.

Montgomery, proceeded toward the enemy beachhead at Vigan. O'Donnell, first to arrive over the target area, made several runs at 25,000 feet against what was mistakenly thought to be an aircraft carrier. Mechanical trouble with the bomb racks as well as antiaircraft fire interfered with the bombing, and it took approximately forty-five minutes to drop eight 600-lb. bombs. No hits were observed. Parsel had better success. He made two bomb runs from 12,500 feet. On the first, four 300-lb. bombs were directed against a cruiser or destroyer without effect, but of the three bombs dropped during the second run, at least one direct hit on a transport was claimed. Montgomery had been allowed time to load only one 600-lb. bomb when he was ordered off Clark Field for the security of his plane. He proceeded to Vigan, however, and dropped his bomb in the water near the transports.⁶³ The two remaining B-17's took off from Clark Field at approximately 0930 to attack Japanese landing craft, transports, and their naval escort near Aparri. Lt. G.E. Schaetzel, pilot of one of the planes, in making a run over several transports at 25,000 feet, apparently scored a hit. The B-17, pounded by antiaircraft fire and under attack by enemy pursuit, was severely damaged, but no one in the bomber was injured and Schaetzel succeeded in reaching San Marcelino.⁶⁴

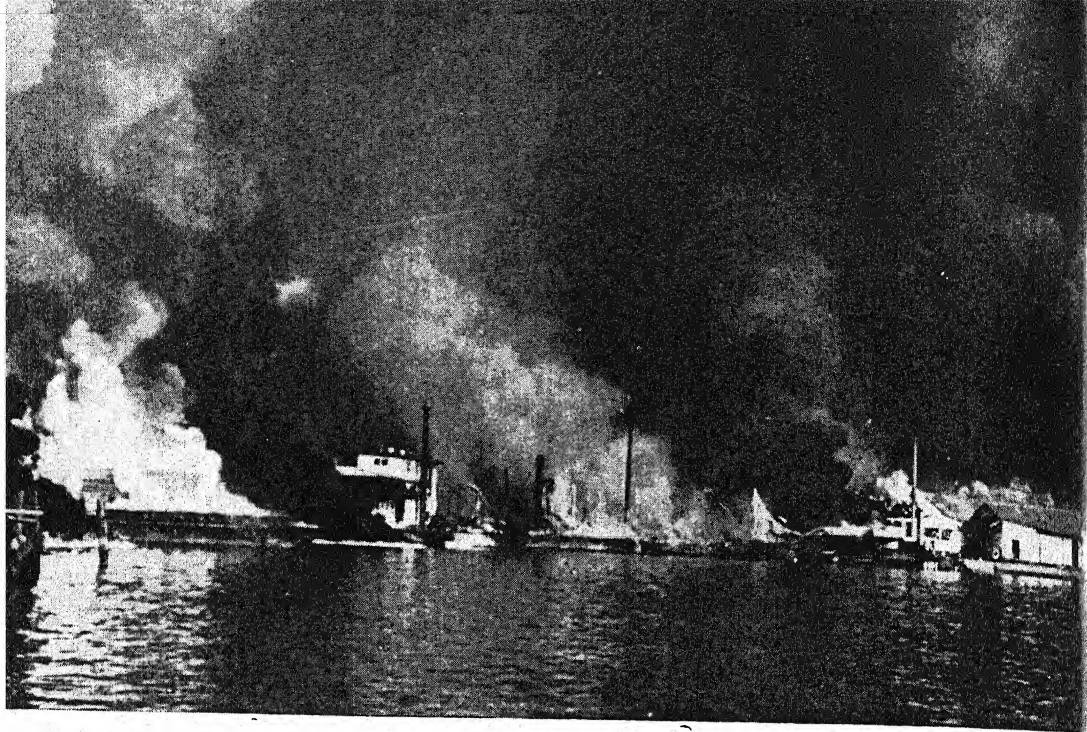
Capt. Colin Kelly in the fifth bomber had been directed to locate and if possible sink an aircraft carrier previously reported along the northern Luzon coast. After a search of the target area he found no sign of a carrier, but Lt. Joe M. Bean, his navigator, had spotted a large Japanese warship which the aircrew took for a battleship.⁶⁵ Indeed, early reports of the ensuing action placed the ship in either the *Haruna* or the *Yamishiro* class.⁶⁶ Actually, it is now known that no Japanese battleship participated in the initial invasion of the Philippines, and that the *Haruna*, the favored choice in subsequent reports, was engaged until 18 December in support of the Malayan campaign. Since training in identification of naval craft was imperfect and many Japanese cruisers were as long or longer than some American battleships, it is not surprising that such mistakes of identification were made, even by the presumably better-trained Navy air personnel. At any rate, Navy PBY's claimed on the following day to have hit a ship of the *Haruna* class in this same general area. Japanese sources indicate that the ship picked out by Lieutenant Bean was in fact the heavy cruiser *Ashigara*, flagship of the Third Fleet in its current operation.⁶⁷ As it moved slowly on the outskirts of the enemy convoy it made a



DAMAGE TO BARRACKS, WHEELER FIELD

DAMAGE AT WHEELER FIELD





CAVITE NAVY YARDS, PHILIPPINE ISLANDS, 10 DECEMBER 1941

PORT AREA, MANILA, 24 DECEMBER 1941



good target, and the bombardier, Sgt. Meyer S. Levin, released in train the entire load of three 600-lb. bombs from 22,000 feet. Although the Japanese assert that no hits were made, the bombs scored near misses and to Kelly's crew it appeared that one of them had struck squarely amidship. When the B-17 turned back toward its base, the warship appeared to have been stopped with black smoke pouring from it. All gunners held their stations during the return flight except the radio operator, who served also as lower-turret gunner, and who left that post to receive landing instructions from Clark Field. Suddenly, as the plane neared the field, two enemy fighters attacked from the rear of and below the plane in an approach which probably would have been observed sooner had the lower turret been manned. Bullets riddled the big bomber. "The commander's dome flew off," the instrument panel seemed to disintegrate, a machine-gun burst penetrated the left rear gunner's post killing T/Sgt. William J. Delehanty, the low-pressure oxygen tanks in the radio compartment exploded, and the empty bomb bay burst into flames. When the flames spread, Kelly ordered the crew to bail out. S/Sgt. James E. Hokyard, Pfc Robert A. Altman, and Pfc Williard L. Money dropped out of the rear compartment; Bean and Levin tumbled out of the escape hatch; and Kelly and co-pilot Lt. Donald D. Robins prepared to follow. The latter succeeded in pulling the rip cord of his parachute after being thrown clear of the plane by a tremendous explosion, and all those who previously had bailed out of the plane reached ground safely. But Kelly's body was later found near the wreckage of his plane.⁶⁸

The employment of heavy bombers on 10 December bore little resemblance to prescribed AAF practice, which called for their use against shipping targets in flights of sufficient size to assure a pattern of bombing large enough to cover any possible move of the target in the interval between release and impact of the bombs.⁶⁹ Not only was there an inadequate number of planes available, but unsatisfactory communications with outlying fields, insufficient protection of airfields, and the consequent necessity of putting planes into the air for their security added to the difficulty of maintaining anything approaching standard operations. No experience could have emphasized more forcefully the fundamental importance to an air force of its ability to assert and maintain control of the air over its own bases. And with the rapid depletion of our interceptor forces and with Japanese landings promising the early establishment on Luzon of

enemy land-based aviation, it was already apparent that American bomber operations would be still further restricted. Even before the completion of these missions of the 10th it had become apparent that Clark Field was no longer suited for service even as a staging point for bomber operations. By the close of the next day all of the B-17's but one, which came in from Cebu on the 13th, had fallen back on the Mindanao base.⁷⁰

If any doubt persisted as to the necessity for this move, that doubt had been removed by a heavy Japanese attack on Nichols Field and the naval base at Cavite just after midday on the 10th. At 1115, interceptor headquarters received specific warning of enemy aircraft approaching from the north, and for their interception dispatched planes of the 17th Squadron to Manila Bay, of the 21st to the port area of the city, and of the 34th to Bataan. A large number of enemy bombers escorted by an estimated 100 fighters roared over Nichols Field and Cavite, systematically bombing and strafing air installations, docks, and supply centers. American pursuits were overwhelmed in their attempts to break up the enemy's bomber formations. The experience of the 17th Squadron, whose ten P-40's found themselves confronted by a force of some fifty bombers and forty fighters, was typical of the action. When the Americans undertook to engage the bombers, enemy fighters thwarted almost every effort, and after some minutes the P-40's were forced to break away because of a shortage of fuel. One pilot, Lt. William M. Rowe, shook off pursuing enemy fighters by taking "a long dive at the ground," and made for Del Carmen Field north of Manila only to find the field under a strafing attack. Turning back toward Clark Field, he landed there safely with no more than two gallons of fuel left. In the engagement, the Americans had lost three planes with no apparent damage to the enemy.⁷¹ At Cavite the power plant, industrial facilities, and supply depots had been "completely ruined." The submarine *Sea Lion* had been sunk and other naval craft damaged.⁷² The Interceptor Command, now left with only thirty pursuit aircraft, including eight outmoded P-35's and not counting one or two virtually useless P-26's, could no longer promise for either air or naval installations even a semblance of adequate protection.⁷³ It was immediately decided to conserve the few planes remaining by using them chiefly for purposes of reconnaissance—a decision which meant that our bases on Luzon would be even more vulnerable to enemy air attack than before.⁷⁴

With American pursuits held for reconnaissance and American bombers withdrawn to the Del Monte field on Mindanao, General MacArthur's care to avoid a premature commitment of his forces left the enemy to continue his landing operations almost unopposed. While strengthening their beachheads at Aparri and Vigan, the Japanese made threatening gestures off the coast of southern Luzon and increased the tempo of their air offensive. On 12 December, more than 100 enemy aircraft were over southern Luzon picking targets at Clark Field, Batangas, and Olongapo. The same points were hit again on the following day, with the addition of destructive attacks on Nielson and Nichols fields. In spite of orders to avoid battle, American and Filipino pilots at times attempted interception. Thus on the 13th, Capt. Jesus Villamor led six ancient P-26's in interception of some fifty-four attacking bombers; the harassing tactics of the Filipino flyers minimized damage to their Batangas field.⁷⁵ But such sporadic efforts proved of only momentary and local significance.

Planned combat missions during the period from 10 to 18 December were few. On the 12th Major Combs carried out a single-plane mission against enemy transports at Vigan. No hits were scored. On 14 December six B-17's were scheduled for a bombing attack on a Japanese bridgehead near Legaspi in southern Luzon, but only three of the bombers, piloted by Lieutenants Wheless, Adams, and Vandevanter, reached the target. Of these, Wheless' plane became separated from the others in low-hanging clouds over Mindanao and made the attack alone from 9,500 feet. Before the results of the bombing could be observed, eighteen enemy pursuits swarmed around the plane. All four gunners were wounded, Pfc Killin fatally, but four enemy planes were apparently destroyed. Wheless in an extraordinary display of airmanship nursed his riddled bomber back toward Del Monte, but was forced to crash-land on a small barricaded field at Cagayan (Mindanao) in a drizzling rain. Of the other two planes to reach the target, Vandevanter's escaped without being attacked, but Adams' B-17 was continuously attacked from the time it reached the target area. Machine-gun bullets cut through the plane, wounding several of the personnel and knocking out two engines. After a forced landing on the island of Masbate, just across the strait from Legaspi, the crew ran for cover while persistent enemy fighters completely destroyed the plane by strafing.⁷⁶ On 16 December, Lieutenants Wagner, Church,

and Strauss were allowed to break the routine of reconnaissance by undertaking the hazardous mission of dive bombing the enemy-held airfield at Vigan. When they had reached the target area, Wagner signaled Strauss to remain on patrol, while he and Church proceeded to bomb the airfield. As they went into a dive, Church's plane was hit and set afire by AA, but he continued the attack, released his bombs, and crashed. Wagner meanwhile had dropped six fragmentation bombs and had strafed a fuel dump and approximately twenty planes parked on the runway. Other combat activity by pursuit pilots was incidental to scheduled reconnaissance missions, as when on 13 December Lieutenant Wagner in approaching Aparri shot down four enemy fighters and went on to strafe others on the field.⁷⁷

The First Withdrawal to Australia

Such isolated victories could not conceal the fact that the Japanese held unchallengeable control of the air over Luzon and, helped by the possession of such fields as those at Aparri and Vigan, were in a position to extend this control over all of the Philippines. Though the heavy bombers had already been forced to move back almost 600 miles from Clark Field to Del Monte, it was now planned to withdraw them another 1,500 miles to Darwin, Australia. In addition to the growing danger that Del Monte would soon be subjected to constant air attack, there was a general lack of maintenance facilities there which seriously limited the operations that could be undertaken. War had come at a time when little more than a beginning had been made in the effort to convert Del Monte into a major heavy bomber base.* Since then personnel of the 5th Air Base Group had worked day and night to strengthen defenses and to improve the facilities. Underground shelters had been constructed instead of barracks, and for purposes of dispersal four outlying fields within a fifteen-mile radius had been selected. But there was no radar set on Mindanao; no pursuit planes were available for defensive cover; nor did the base enjoy the protection of any large-caliber antiaircraft guns. Antiaircraft defenses were limited to water-cooled .50-cal. machine guns and a few additional air-cooled .50's removed from B-17's. The air warning system consisted of lookouts posted on hills north and south of the field with a telephone line to operations headquarters. Until the Del Monte base could be greatly strengthened and its facilities improved, it seemed advisable

* See above, pp. 187-89.



to withdraw the bombers to a base that would afford an opportunity for a thorough overhaul of the already badly battered planes.⁷⁸

The decision had been made none too soon. On 16 December, mechanics began to service the bombers for the 1,500-mile flight to Darwin. Three days later, Del Monte experienced its first serious air attack. As dusk fell that day, three B-18's had just landed, one of them bringing General Clagett from Manila, and before they could be dispersed and camouflaged with coconut leaves, twelve enemy fighters skimmed the field to destroy the bombers by strafing. Several camouflaged B-17's, loading for their trip to Australia, were overlooked and took off that night as scheduled to join others which had reached Australia during the preceding two days. Within another two days the last of the B-17's, making a total of fourteen, arrived at Batchelor Field near Darwin.⁷⁹

In spite of the decision to transfer all heavy bombers to Australia, there was no intention of abandoning the defense of the Philippines. The morale of officers and men on Luzon remained high, in part at least because they constantly expected the arrival of reinforcements. According to one writer, the Army at this time traveled as much on rumors as on its stomach. One day there was news that the Navy was coming to the rescue, "sweeping everything before it." Again "someone" heard that Dewey Boulevard was lined with A-20's. On another occasion, 27th Group headquarters was falsely informed by telephone that its A-24's were being unloaded at the dock. A rush to the docks revealed nothing except, as the group historian recorded, "that there was probably a Fifth Columnist or two on Luzon and they had our number."⁸⁰

Hope was not confined to the rank and file. General MacArthur throughout December thought that the Philippines could be reinforced, mentioning in his communications to Washington the possibility of early air counterattacks against Formosa. It was his feeling, however, that first priority in allocations to his theater should consist of pursuit planes and bombs to be brought in by aircraft carrier. "High-flying bombardment aircraft" and ground troops were rated by him as of secondary importance.⁸¹ General Brereton also believed that hope need not be abandoned. On 14 December he listed for MacArthur ten squadrons of pursuit aircraft as an immediate requirement, indicating that in addition to the 52 A-24's and 18 pursuit planes expected in Australia before the end of the month, it would be "advan-

tageous" to have 200 pursuit and 50 dive bombers delivered to the Philippines by aircraft carrier. Fields for these planes he felt could be maintained satisfactorily, and he pointed out that airdrome construction following the outbreak of war had been accelerated. His engineers had reported that Clark, Nichols, San Marcelino, and Del Carmen fields on Luzon could be maintained in operating condition, and that some eight or ten additional strips would be ready by the last of December.⁸²

Nor had Washington abandoned plans for support of the Philippines. President Roosevelt specifically directed that reinforcements should be sent there with all speed, and MacArthur was informed on 15 December not only that the strategic importance of the Philippines was fully recognized but that there would be no wavering in the determination to provide support. In partial fulfilment of the promise, the dispatch of sixty-five new heavy bombers had been authorized in addition to fifteen LB-30's repossessed from the British, a transfer to be completed by 21 February 1942, and MacArthur was further informed on 23 December that these planes, to be ferried via the South Atlantic and India,* would come under his control at Bangalore.⁸³

It soon became evident, however, that the time factor outweighed all others. The Japanese were pressing down from their northern landings; in the south the city of Davao, with its fifth column of some 30,000 Japanese, was easily overrun on 20 December; and by that date the heavy elements of the Japanese Second Fleet had moved north to cover the main enemy landing on 20-21 December at Lingayen Gulf. MacArthur's strategy against this assault was based upon a plan which "had been on the books" for many years. It consisted of delaying actions in central Luzon and a retreat to Bataan where, it was hoped, the limited forces available would serve as a buffer for Corregidor.⁸⁴

Except for reconnaissance missions carried out by pursuit pilots, the air force could offer little support to the hard pressed infantry in this withdrawal. From its distant base at Darwin the 19th Group undertook on 22 December to mount a mission of nine B-17's in accordance with a plan to use Del Monte as a staging point for refueling and rearming. Having taken off from Batchelor Field, they swept over Davao Gulf at sunset and dropped 30 x 500-lb. bombs on a cluster of seven ships. No pursuit or AA interfered with the attack, but visibility was poor and results were negligible. The B-17's landed

* See below, pp. 331-33.

after dark at the now much-bombed Del Monte field, from which four of them took off again shortly after midnight for Lingayen Gulf, almost 600 miles away. Again visibility was poor and although transports were bombed, no hits were observed. The Japanese put up a barrage of anti-aircraft fire which did no damage, but enemy fighters pursued with such persistence that the bombers could not land at San Marcelino as had been planned. Instead, they headed for Australia. One of the planes came down for refueling at an emergency field at San Jose in Mindoro; the other three reached the Dutch base at Amboina before landing. By 24 December all nine aircraft, five proceeding directly from Del Monte, had returned to Batchelor Field.⁸⁵ Meanwhile, another flight from Australia, this time of three heavy bombers, had arrived at Del Monte. There on 24 December the aircraft were loaded each with 2,100 gallons of gasoline and 7 x 300-lb. bombs in preparation for a mission against Davao. Two of the planes then bombed the Davao airfield from 15,000 feet, and shortly thereafter the third attacked shipping in the Davao harbor. All three planes returned to Darwin, though two of them had sustained considerable damage.⁸⁶

The pursuit planes in their daily reconnaissance missions continued to report the steady advance of the enemy from the north and additional landings along the Luzon coast. Against one of these landings, in San Miguel Bay on the southeast coast, the Interceptor Command decided on 23 December to throw virtually all its remaining aircraft. Attrition had cut down the 24th Group's striking power to a total of twelve P-40's and six P-35's, but they proved sufficient to create a gratifying confusion among enemy personnel in landing barges and around supply dumps ashore. The Japanese put up a heavy screen of anti-aircraft fire. One P-35 was forced into a crash landing, and an explosive bullet, shattering the windscreen of Lieutenant Wagner's P-40, well-nigh blinded him.⁸⁷ The American effort was in effect a last gesture of defiance, for following this mission all air force units received instructions to evacuate currently held Luzon bases as a part of the general withdrawal to Bataan. The evacuation began on 24 December.

Typical of the confusion which naturally reached its climax in this withdrawal was the experience of the 27th Group, whose personnel had suffered the particularly galling experience of being caught in the front line of war without their planes. On 18 December the group had been deprived of its commander when Maj. John H. Davies, together

with a dozen other pilots, had been flown to Australia for the purpose of ferrying back the first of the group's long-awaited A-24's. Three days later, remaining personnel had been ordered to prepare against the arrival of the planes three new fields to be located at Lipa below Manila and at San Marcelino and San Fernando to the northwest. On the 24th, the move from Manila to these points had just been completed when another order directed all personnel to proceed to the Manila docks. From there by truck and boat they made their way to Bataan, where on Christmas day they celebrated with a dinner of bread and hot coffee, topped off in a few cases by a nip of "grog."⁸⁸ For all practical purposes, the 27th Group now became a part of General MacArthur's infantry, with which it would fight to the bitter end.

The same fate awaited personnel of the 24th Group, but for a time the tentative plan and organization reflected a continuing hope of reinforcement. Both General Clagett and General Brereton had left the Philippines, the latter on 24 December with members of his staff in two PBY's to establish a new headquarters in Australia.⁸⁹ By the 29th of December, 650 officers and men of the 19th Group had embarked in a hazardous movement by boat from Luzon to Del Monte, which the Australia-based bombers still hoped to use as a forward staging point for bombing operations.⁹⁰ On Luzon, which for all practical purposes now meant Bataan, there remained the Interceptor Command under the capable and energetic Col. Harold H. George, who as senior air officer proceeded to bring some order out of the confusion accompanying the move to Bataan. His handful of pursuit planes were distributed among three newly constructed fields at the head of the peninsula under a plan to fall back as required to the Mariveles, Cabcaben, and Bataan fields nearer Corregidor. Except for the few pilots required to fly these planes and the men necessary for their maintenance, the 24th Group was posted as infantry reserves, an action, as events proved, merely preliminary to its redesignation on 10 January as the 2d Infantry Regiment (Provisional) with assignment to the 71st Division. Colonel George had only a skeleton staff, but one which could be expanded in the event hoped-for reinforcements arrived before the tired American troops had been overwhelmed.⁹¹

Chief hope of immediate relief rode with the convoy of eight transports and freighters which had left Honolulu for the Philippines on 29 November under escort by the U.S. cruiser *Pensacola*. As already

noted, this convoy carried the ground echelon of the 7th Bombardment Group (H), other air combat and service personnel to a total of approximately 2,500 officers and men, 18 P-40's, and the unassembled 52 A-24's of the 27th Bombardment Group, in addition to large supplies of aviation fuel and ammunition. When after crossing the equator word came of the Japanese attack on Pearl Harbor, protective measures were taken, and as many guns as could be found were set up on improvised mounts; but five of the vessels were left entirely without armament. Even after picking up additional guns at Suva in the Fiji Islands, the convoy remained ill prepared to defend itself. On 12 December, the convoy being still intact, it was decided to organize the troops aboard into a task force under command of Brig. Gen. Julian F. Barnes, senior officer present; and the following day General Barnes received orders to proceed with the convoy to Australia, where he would assume command of all U.S. troops in that country. There the aircraft, ground crews, and other necessary equipment would be landed, the aircraft to be assembled for immediate ferrying to Luzon, while the convoy itself would proceed, conditions permitting, to the Philippines. General Barnes announced on 19 December that his command would be known as United States Forces in Australia, a designation altered on 5 January to United States Army Forces in Australia (USAFIA).⁹²

Meanwhile, preparations were under way in Australia for receiving the convoy and forwarding reinforcements to our beleaguered forces on Luzon. The U.S. military attaché, Col. Van S. Merle-Smith, acting under instructions from Washington made preliminary arrangements for assembly of aircraft and disposition of the vessels. General Barnes received notice on 21 December that Maj. Gen. George H. Brett would soon reach Australia to organize and command all American units. But General Brett, who had served in almost every administrative post in the Air Corps, was at the time completing an official tour of the Middle East, India, and China and did not leave Chungking for Australia until the 24th.⁹³ En route to his new post he conferred with British officials in India and Dutch authorities in Java, so that his arrival in Australia to take up the mission of establishing a supply system for reinforcement of the Philippines was delayed until the end of December. Pending the arrival of General Brett, General Clagett, who had left Luzon on the 18th, assumed command when on 22 December he reached Brisbane. There on the same day the convoy

arrived and on the following day began its debarkation. Arrangements had been made for quartering the American troops on the grounds of the local Ascot and Doomben race tracks, with tenting and messing facilities provided by the Australian army, and for the use of the near-by Archerfield and Amberley airdromes for assembly of the aircraft.⁹⁴

Several factors interfered with a speedy execution of plans. The convoy had been loaded on a peacetime basis, with little attention to the advantage of placing equipment on the same vessel with its designated unit. In order to find the organizational equipment of the troops who were to remain in Australia and the parts for aircraft to be assembled there, it proved necessary to unload practically the entire cargo, sort it, and reload such of it as was destined for shipment north to the Philippines. Even then vital parts of the A-24's—trigger motors, solenoids, and gun mounts—were never found. After many hours of fruitless search for missing parts, it was decided to reload equipment scheduled for water transport on the two fastest ships, the *Holbrook* and the *Bloemfontein*. With Australian dockworkers assisting in the effort through twenty-four hours of the day, the reloading was completed by 28 December. The *Holbrook* sailed immediately; the *Bloemfontein*, delayed until its captain received clarification of orders from Dutch authorities, left the next day.⁹⁵

Though the initial steps toward reinforcement of the Philippines had thus been taken, further delays would frustrate the effort. Assembly of the planes was accomplished in short order, but the missing parts of the A-24's were never found; and since they were not available in Australia, it was necessary to await their shipment from the United States, whence they were dispatched by air early in January. Moreover, it had been discovered that there was no Prestone for the P-40's, and though some was eventually rounded up in Australia, this entailed still another delay.⁹⁶ And immediate difficulties of this sort, despite the urgent need for planes on Bataan, were incidental to the more important task of establishing a base in Australia that could maintain a continuing flow of reinforcements to Luzon. The war had caught the United States midway in a program for air reinforcement of the Philippines—planes, personnel, and equipment had already been allocated for the purpose and their movement in many instances had been started. If the problems involved in channeling their movement through an Australian base could be promptly solved, there was a real

prospect of getting substantial, even though limited, reinforcements to MacArthur. There were also grounds for hoping that heavy bomber units now based on Darwin might increase the weight of their operations against Philippine targets. The Japanese by a landing on Wake Island on 23 December had cut the only tested air route for movement of that type of plane, but progress on construction of a ferry route through the South Pacific offered grounds for hope that the inaugural flight could be made even in advance of the scheduled date of 15 January. Both the Army and the Navy were working feverishly to provide at least minimum facilities on Christmas, Canton, Samoa, the Fijis, and New Caledonia.⁹⁷ At the same time, steps were being taken to extend the ferry route across the South Atlantic beyond Africa to India and the Netherlands East Indies.* But again, the weight of the bombing effort that could be made would depend in no small part on the resources of an Australian base, and the task of developing such a base was tremendous.

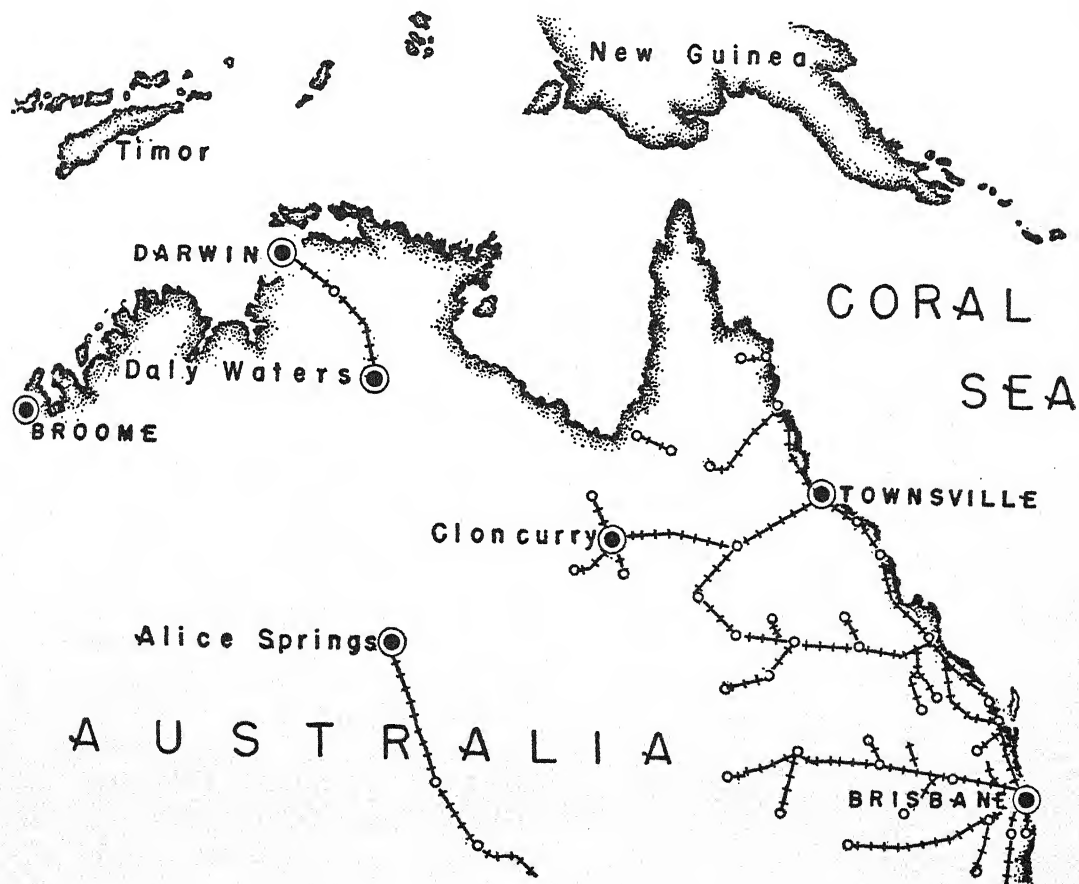
Its establishment depended almost entirely upon the arrival of personnel, supplies, and equipment from the United States. General Marshall had suggested that Australian resources be utilized as much as possible in order to relieve the burden on American transport, but the industrial facilities of Australia were limited at best and, moreover, the nation was already hard pressed to supply the needs of its own armed forces. Of more immediate concern were the handicaps imposed by Australia's transportation system. Military necessity gave the greatest strategic importance to that section of the country which had been least developed; the main centers of population, wealth, and transportation were in the southeast, whereas the north and northeast now held the position of key military importance. The difficulty of transporting goods overland from Brisbane to Darwin was as great as from Darwin to the Philippines, if not so dangerous. No railroad connected the two cities, which were 2,500 miles apart by the most expeditious land route. For over a quarter of this distance only a rough motor road cut through the central desert, and this road ended approximately 300 miles from Darwin to connect with a railway capable of carrying no more than 300 tons of freight per day. Repair facilities were inadequate for maintenance of either road or railway, and some of the rolling stock literally buckled under the weight of heavy American equipment.⁹⁸ The problem of storage facilities was

* See below, pp. 329-31.

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solved when the Australians made several wool warehouses temporarily available. But the question of an adequate labor supply was not so readily resolved.⁹⁹ Not only did Australia have a small population of about 8,000,000, but her manpower was already heavily committed to her own war effort and the greatest need for assistance fell in areas of relatively sparse settlement.

Fortunately, preliminary steps had been taken prior to the war for co-ordination of defensive efforts between American and Australian authorities as occasion might require. General Brereton had visited Australia in November, and plans for the South Pacific air route had required arrangements for use of airfields and other facilities within Australian territory. It was against this background, then, that the



first of several Allied conferences met on 28 December at Amberley Field to consider common problems and opportunities for mutual assistance. It was agreed that American officers would assume actual responsibility for the erection of their planes, but that to assure proper co-ordination of the effort with plans for movement of the assembled planes an Australian officer would be put in general charge. Since the aircraft would have to be ferried overland for a distance of over 2,000 miles before they reached a jumping-off place at Darwin, it was decided to establish refueling depots at Charleville, Cloncurry, Daly Waters, and Darwin. Though 100-octane gasoline could be procured from the Netherlands East Indies, this fuel was of so high an aromatic content that it destroyed the leakproof lining of fuel tanks, and consequently forced consideration of the problem of importing American fuel. In addition to limited stocks built up before the war, the steamship *Mauna Loa* was on the way to Brisbane with a load of 400,000 gallons, but even so the supply would fall far short of the prewar goal of 10,000,000 gallons.¹⁰⁰

The Amberley conferences also gave attention to a problem of training. Not only was the air route from Brisbane to Darwin a difficult one for those who lacked experience in the area, but the over-water hops from Darwin to the Philippines presented their own navigational and combat hazards. On 28 December General Clagett and Sir Charles Burnett, chief of the Australian air staff, agreed to inaugurate a training program for A-24 crews at Archerfield and for P-40 pilots at Amberley. Details of the two programs were worked out the following day at a meeting of American and Australian officers. The Australians were given general oversight of the program, while Maj. John H. Davies, commanding officer of the 27th Group, received responsibility for the standard of training. The prescribed course consisted of practice in night flying, dive bombing, and aerial gunnery.¹⁰¹ Thus was the foundation laid for a close collaboration between personnel of the Royal Australian Air Force (RAAF) and the AAF that would continue through almost four years of war.

The American command charged with these and other preparations in Australia was not technically an air organization. But for the time being at least, its responsibilities called principally for support of air operations, a consideration that probably had affected the decision to assign General Brett to the command of United States Army Forces in Australia. On 29 December, two days before Brett's arrival in Aus-

tralia, General Brereton had reached Darwin after conferences en route from the Philippines with American naval commanders and Dutch air and army officials at Soerabaja and Batavia. It was his mission under instructions from General MacArthur to organize "advanced operating bases from which, with the Far East Air Force, you can protect the lines of communications, secure bases in Mindanao, and support the defense of the Philippines by the U.S. Army Forces in the Far East." He was to establish liaison with the Commanding General, U.S. Forces in Australia, who was "charged with the organization of bases in Australia," and from those bases to direct "the operation of the Far East Air Force . . . and the disposition of Air Corps troops in advance thereof in order to accomplish your assigned mission."¹⁰² General Brereton established a temporary headquarters at Darwin.

Though the aim of all operations still remained officially the reinforcement of the Philippines, there was now little justification for the hope that substantial reinforcements and supplies could reach MacArthur's forces in time to save them. In addition to the difficulties, delays, and frustrations already noted, it was daily becoming more unlikely that pursuit aircraft, the first requirement in air reinforcements, could be ferried into the Philippines. The Japanese, who recently had captured Davao and as a result were using airfields on Mindanao by the last week in December, threatened soon to be astride all possible air routes from Australia to the Philippines. Under these circumstances both the A-24 and the P-40, their range limited to little more than 500 miles, could be intercepted with relative ease. Moreover, it was evident enough that the Allies would soon be hard put to hold even the key points in the Netherlands East Indies against the continuing advance of Japanese forces.¹⁰³

General Brett, who reached Australia on 31 December, found little immediate hope of an effective reinforcement of the Philippines. On 2 January he radioed General Marshall that it would be impossible to carry out much in the way of tactical operations until an "establishment" in Australia, including a large air base at Darwin and a major supply and repair base at Townsville, had been developed. In a recent conference with Gen. Sir Archibald Wavell, who had been transferred from the Middle East to India the preceding July, Brett had found agreement on general principles of strategy, and on 3 January he presented their conclusions to a conference with Australian chiefs of staff and other military and governmental officials. In considering

the possibilities in the situation confronting the associated powers, he emphasized the necessity for a defensive strategy until such time as sufficient forces had been brought together for offensive operations "(a) by working from Burma into China towards Shanghai to acquire advanced bases; (b) by exerting slow pressure through the Netherlands East Indies and Malaya; and (c) by exerting similar pressure from Australia into the islands to the North." On the following day he ordered the *Holbrook* and *Bloemfontein*, the only vessels so far dispatched to MacArthur, to put in at Darwin and to discharge their cargo and all troops at that port.¹⁰⁴

By this time the War Department, too, held grave doubts as to the feasibility of sending substantial reinforcements to the Philippines. It was clear that a reservoir of supply could not be built up in Australia except over a period of many months. Hope of ferrying short-range planes to the Philippines declined with each report of the progress of Japanese forces, and the prospect of breaking through the sea blockade with a naval escort for convoys was even less promising. President Roosevelt and Prime Minister Churchill with their chiefs of staff, then meeting in Washington, had considered such an operation. But the U.S. Navy had been hard hit at Pearl Harbor, the balance of naval power in the Pacific had been further upset in Japan's favor by loss of the British *Prince of Wales* and the *Repulse* to enemy bombers on 10 December, and forces already committed to the Atlantic and Middle East theaters could not be released within the time available.* A memorandum of 3 January for the Chief of Staff signed by Brig. Gen. Leonard T. Gerow, Assistant Chief of Staff, outlined the operations that would be required to restore the American position in the Philippines. The first requirement would be to gain air and naval superiority south of the line Malaya-Borneo-Celebes and to make preparations for extending this control northward. With air supremacy established in the Netherlands East Indies, it would be necessary to extend this supremacy from NEI bases northward to cover Mindanao, and then with the support of strong naval and air forces to land large ground forces on Mindanao preparatory to a drive into Luzon. The associated powers commanded of course neither the time nor the means for such an operation as this, and on the basis of an unavoidable conclusion that "the forces required for the relief of the Philippines cannot be placed in the Far East area

* See below, pp. 239-43.

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within the time available," it was recommended that for the present Allied efforts in the Far East be limited to holding the Malay barrier, Burma, and Australia and to operations projected northward "to provide maximum defense in depth."¹⁰⁵

Of the soundness of this conclusion events would soon offer more than ample proof. On Bataan the American forces would continue their heroic struggle, but a skillful and swift-moving enemy had already engulfed them.

*ESTABLISHMENT OF
THE FUNDAMENTAL BASES
OF STRATEGY*

BRILLIANTLY executed though they were, the Japanese attacks of 7 December against Oahu and Luzon appear in retrospect as a colossal blunder. The perfection of those operations gave evidence of meticulous planning at the tactical level, but not of sound thinking along broader military and political lines. In fact, an analysis of postwar interrogations of high-ranking military and governmental leaders in Japan suggests that they had precipitated a major war without formulating for it an over-all strategy. Hopelessly out-matched in actual and potential industrial capacity, the Japanese had attacked with no firm pattern of operations in view and with no concept of how the war might be brought to a successful conclusion. There was some hope that if a formidable chain of island defenses could be thrown around the Inner Empire, American preoccupation with Germany and discomfiture over initial defeats might bring a negotiated peace, with Japan in uncontested control of the Greater East Asia Co-prosperity Sphere. Such a hope was, of course, based upon a most erroneous interpretation of American psychology.

Before Pearl Harbor the administration's foreign policy had been bitterly opposed by a highly vocal minority in the United States. This lack of agreement, perfectly consonant with our democratic process, might easily have been exaggerated by the misunderstanding of totalitarian leaders until it appeared as a paralyzing disunity. But among many of the isolationists the prospects of war with Japan had been less distasteful than that of war in Europe, and the very means by which the Japanese chose to open hostilities served temporarily to still dissident factions. When on 11 December Germany and Italy joined their Axis partner, the new U.S. unity was cemented; the

almost perfect unanimity of the vote in the Congress on our declaration of war was symptomatic of the national temper.¹ This did not mean that criticism of the administration's policies was completely hushed—within a month after Pearl Harbor the basic war strategy was under fire from intransigents in the press and in the Congress—but the nation as a whole began to gird itself for a war effort on a scale hitherto unprecedented.

If the national reaction to Pearl Harbor boded ill for the Axis powers, there was still little cause for early optimism in the United States. Indeed, the success of the Japanese attacks threatened momentarily to disrupt the whole trend of our strategic thinking. The plans which had been worked out in collaboration with the British earlier in 1941 had been oriented toward Germany. The Tripartite Pact (27 September 1940) had strengthened the belief that Japan would join Germany should that nation go to war with the United States, but Anglo-American military leaders considered it possible to contain Japan by a strategic defensive until the defeat of Germany would allow full force to be applied in the Pacific. From 1938 the United States had invoked sanctions against Japan in the form of moral embargoes, but until summer of 1941 the administration had not been so outspoken in its denunciation of Japanese activities as of German. The President's radio address of 27 May 1941, announcing the proclamation of an unlimited national emergency, is indicative of this policy: it was most frank in its description of the dangers we faced from Hitler's government, but it contained no direct reference to Japan.² To gain time for completing our defense measures, the administration continued to negotiate through normal channels with Japan until that nation began, late in July, to threaten southern Indo-China. A Japanese move in that direction would have isolated the Philippines and menaced both the Netherlands East Indies and lines of communication essential to the security of Great Britain itself. Immediately the United States began to stiffen its policy,³ and at the Atlantic conference in mid-August the President and Prime Minister agreed to act along parallel lines in warning Japan.⁴ From there on, relations between the United States and Japan steadily worsened until by 26 November they had reached a crisis.⁵ Hurried steps had been taken to reinforce American outposts in the Pacific, and by the British to improve the defenses of Singapore. In each case the efforts were limited in nature. To a large extent this was due to the as yet inade-

quate strength of the U.S. armed forces, to our materiel commitments to England and the Soviet Union, and to the vast naval and military responsibilities which the British had elsewhere. But there was also an underestimation of Japanese capabilities both by commanders in the Far East and by leaders in Washington and London, and whatever alarm may have been entertained over Japanese threats toward the south, there seems to have been little doubt of the ability of the associated powers to implement the strategy described in ABC-1.

The overwhelming strength of the Japanese army was recognized, but inasmuch as its southward movement must be by sea, we counted on neutralizing, if not wholly containing, that strength by Allied naval and air striking forces. Initial Japanese successes cut at the very roots of this concept. By 10 December, the enemy had destroyed or immobilized the heavy units of the U.S. Pacific Fleet, had sunk the newly arrived British warships *Repulse* and *Prince of Wales*, and had wiped out in large part our air strength in Luzon and Oahu. Manila and Hong Kong, already under attack, were doomed, and the drive for Singapore had begun. With their striking power crippled and their main bases rendered ineffective, the associated powers could offer little resistance as the enemy pushed on pell-mell for the Netherlands East Indies. The swiftness of that rush was hardly appreciated in the first few days of the war, but already it was obvious that pre-war plans must be reviewed.

Meanwhile RAINBOW No. 5, as revised in November, was invoked—against Japan on 7 December, against Germany and Italy on the 11th—but with the proviso that Army task forces would be designated and dispatched only in accord with subsequent War Department instructions.⁶ Within the Air Staff there was an immediate, though momentary, reaction in favor of deploying all available air strength for defense of the Western Hemisphere and, if practicable, of Hawaii and the Philippines.⁷ Within a week, however, AAF planners returned to a more familiar theme with a new long-term design for offensive war. This plan, called AWPD/4 (15 December 1941) was hardly more than a restatement of the salient features of AWPD/1, with requirements somewhat inflated under the stimulus of war. It called for an air force of some 3,000,000 men and 90,000 planes, to be achieved by “giving NATIONAL FIRST PRIORITY TO THE PRODUCTION OF AIRCRAFT.”⁸ This plan was not accepted. It was clear that the role of the AAF could be determined only in

reference to the broadest national policies and that firm decisions on those policies must await further consultation with the British, whose declaration of war against Japan had come with ours on 8 December.

The need for close co-ordination of the efforts of all anti-Axis powers was recognized by the American government and its military leaders. During World War I, the Allies had achieved unity of civilian direction and military command only in the face of threatened defeat in the last year of the conflict; the lesson had not gone unheeded. In his request for a declaration of war against Germany and Italy, the President emphasized the need of "rapid and united effort" by all freedom-loving peoples in their struggle against the Axis powers.⁹ The Declaration of the United Nations, signed in Washington on 1 January 1942 by twenty-six nations, gave a pledge of mutual co-operation, but the significance of that document was largely political.¹⁰ The most concrete military measure took the form of bilateral agreements between the United States and the United Kingdom. These agreements, while of special import to the two principal parties, provided a workable means for co-ordinating the activities of the British Commonwealth of Nations and of certain governments in exile, through the influence of England, and of Latin-American republics and China through that of the United States. Collaboration with the U.S.S.R.—because of its geographical isolation, its neutrality toward Japan, and the absence of any tradition of intimate relations with the western powers—was to constitute a unique problem throughout the war.

*The ARCADIA Conference: Over-all Strategy and
Immediate Deployment*

On 22 December, the press announced dramatically the arrival in Washington of Prime Minister Churchill, his chiefs of staff, and other high-ranking British officials.¹¹ On the following evening, the British party met with President Roosevelt and his military and civilian advisers at the White House.¹² The conference thus inaugurated, coded as ARCADIA, was in frequent session until 14 January. In his address to the Congress on 26 December, the Prime Minister declared that he had come "in order to meet the President of the United States and to arrange with him for all that mapping out of our military plans and for all those intimate meetings of the high officers of the armed services of both countries which are indispensable to the successful

prosecution of the war.”¹³ A more specific description of the business at hand was contained in a suggested agenda radioed by the British delegation en route on board HMS *Duke of York*.¹⁴ This called for: (1) a redeclaration of the fundamental bases of joint strategy; (2) the interpretation of this strategy into terms of immediate military measures; (3) the allocation of joint forces in harmony with the accepted strategy; (4) the formulation of a continuing program to raise and equip the forces called for in that strategy; and (5) the establishment of joint machinery for directing the war effort. In general, this preview may serve as a guide to the accomplishments of the conference. If some of the tasks were only partially achieved, a solid foundation was laid in each case.

The restatement of the basic Anglo-American strategy was at the same time both the most important of the tasks and the most readily completed. The British chiefs of staff early presented their views in a memorandum which, with slight revisions by the Americans, was approved on 31 December.¹⁵ The strategy thus accepted was, “in spite of recent events,” essentially a reaffirmation of the principles of ABC-1. Again Germany was declared the chief enemy, the Atlantic and Europe the areas in which the principal efforts should be applied. The nature of the contemplated efforts was unchanged: defense of production areas in North America and the United Kingdom to insure realization of the Victory Program of munitions; maintenance of designated lines of communication, both sea lanes and air routes; forging and tightening a ring around Germany; weakening the Reich by indirect methods and by a concentrated bomber attack; and preparation for the eventual invasion of Germany. Meanwhile, in the Pacific only such positions should be defended as would “safeguard vital interests and deny Japan access to needed raw materials.”

The determination to concentrate on Germany first was the most momentous strategic decision of the war, both in respect to the total effort and to the role of the AAF. Apparently accepted without dissent in the previous spring, that decision seemed less unimpeachable in the flood tide of Japanese successes. It was not to go unchallenged either within high military circles or in public, but it represented a view of the war which had long been held by the air planners and from which AAF Headquarters was never to deviate.

The translation of the accepted grand strategy into terms of immediate operations and allocations raised problems not so readily solved.

Against the decision to concentrate first against Hitler, with all the priorities implied by that choice, was balanced the very pressing need for reinforcement of the Philippines and of other positions in the Far East. The limiting factor was not only—perhaps not principally—the number of troops available. The shipping shortage which was to remain a brake on projected operations throughout much of the war made impossible the immediate deployment of all those units which were trained and equipped for action.¹⁶ But in spite of the over-all priority given to the European war, some reinforcements had to be sent to the Pacific, and because of the immense distances involved in deploying troops in that area, it was only by adroit juggling of transport facilities that even barest necessities could be met.

One inevitable but ironical concomitant of the primacy given to the European theater was the knowledge that U.S. ground units sent in that direction were not destined for immediate combat. No major invasion of the continent was contemplated for 1942, though it was considered expedient to hold in reserve forces which might take advantage of any radical change in the situation. Hence it was that most of the movements and projects designed for the Atlantic-European theaters during the first half of that year were those preparatory and precautionary deployments which had been set up in RAINBOW No. 5. The lesser movements to the Pacific bore, on the contrary, the stamp of urgency. A more detailed discussion of some of these projects in both Atlantic and Pacific will follow in appropriate chapters; here it is sufficient to list briefly the points at issue and the decisions made.

The most considerable deployments in the Atlantic-European area were those which had been designated in the prewar plans for the British Isles and Iceland. The decision to substitute U.S. Army troops for U.S. Marines and British troops in Iceland and for the British garrison in Northern Ireland imposed severe demands upon combined shipping facilities.¹⁷ Each move, however, offered important advantages. Marines would be made available for projected amphibious operations, and British troops would be released for service in the Middle East, where they in turn would relieve Australian units needed for the defense of their own homeland. The movement of U.S. Army forces to Iceland had begun in August 1941,* but because of the tight shipping situation that project was not completed by the target date

* See above, pp. 158-60.

of March 1942.¹⁸ The force set up for Northern Ireland was much greater than that stipulated in ABC-1. At Mr. Churchill's request, U.S. troops were to relieve British troops then garrisoned in Northern Ireland and were to be wholly responsible for the defense of that area rather than merely of U.S. bases there as previously agreed. This move, in addition to releasing British troops for service in more active theaters, seemed politically expedient in view of Eire's attitude toward the war. A new plan for this project, MAGNET, was approved on 11 January.¹⁹ It called for the dispatch of the V Corps (reinforced) plus air and supply organizations. The first sizable contingent landed at Belfast on 26 January,²⁰ but because of more immediate needs in the Pacific, the movement was thereafter retarded. The air contingent was not scheduled for movement until late spring.

The one European task force which was designed for early offensive action was the AAF bombardment force which, according to prewar plans, was to join the RAF in the attack on Germany. This project was approved informally at the first of the ARCADIA sessions, and reaffirmed on 13 January.²¹ The movement should begin "as soon as these forces and shipping become available." In view of the desperate need for aircraft and crews in the Pacific and for the expanded training program, immediate deployment was impossible. Current opinion that the initial heavy bomber groups might move out in March²² was to prove too optimistic.

A plan for movements within the Western Hemisphere adopted on 13 January²³ involved for the moment less shipping. It was agreed that, subject to the consent of the Netherlands government, U.S. troops should replace British garrisons in Aruba and Curaçao, and that the United States should continue to hold forces in reserve for the security of northeast Brazil against possible Axis thrusts.²⁴

The most ambitious project considered for the first half of 1942 was the joint occupation of French Northwest and/or North Africa. Before Pearl Harbor, the U.S. Joint Board had worked tentatively on plans for the seizure of Dakar (JPB BLACK) and Casablanca (GYMNAST) to forestall any German move toward the South Atlantic and South America.²⁵ The British meanwhile had been thinking of a possible landing in Tunisia, and at ARCADIA the joint planners were directed to weld the two concepts into a single plan (SUPER-GYMNAST).²⁶ In view of the many unpredictable factors involved in so complex an operation, and in view of the scale of

effort required in terms of forces and shipping, no firm decision had been reached when the ARCADIA conference closed. Active planning for the operation continued throughout January and February.²⁷ The plan was shelved on 3 March,²⁸ only to be revived in the summer in preparation for the invasion of November 1942.

Insofar as the Atlantic-European theaters were concerned, then, the Japanese attacks had done little to modify the strategic ideas of spring 1941, either in respect to over-all priorities or to specific deployments. In the Pacific the situation had been altered radically by the events of December; and, if the Anglo-American strategists were unwilling to forsake their basic concepts for the war against Japan, they had to re-examine the means by which those concepts might be put to test. Discussion by the Anglo-American chiefs of staff centered around three fundamental problems: a reconsideration of the nature of the strategic defense against Japan; the allocation of forces and shipping for that defense; and the establishment of an effective system of command over the widely scattered forces of the several United Nations. These problems were intimately related, and any ready solution was complicated by the whirlwind advance of the enemy, by the poverty of our intelligence concerning his intentions and capabilities, and by the primitive communications system upon which the widely scattered forces were dependent.

Eventual victory over Japan was contingent on the development of forward bases from which the heart of the empire could be hit. For the immediate future the best that could be hoped for was to maintain security of defensive base areas, to keep open the lines of communication, and to encourage Chinese resistance.²⁹ Defense of the central and eastern Pacific areas devolved upon the United States alone. There seemed little likelihood of an attack in force upon the western coast of the United States,³⁰ and reinforcements were available for Alaska and Hawaii. The most urgent requirement was for the Far East area, and on 31 December the Anglo-American chiefs of staff agreed on a general policy for that region.³¹ Essentially the plan called for a defense in depth of the Malay barrier, with air and naval forces operating in advance of that line to retard the southward drive of the enemy. Australia and Burma were to serve as the supporting base areas. To conserve shipping, supplies were to be found locally to the extent possible, but since the great bulk of forces and munitions must be brought from the United States and from England,

additional arrangements had to be made to protect lines of communication from those countries and within the theater.

The task of providing reinforcements in combat units and additional supplies was not a simple one. In electing to concentrate Anglo-American efforts first against the Nazis, the chiefs of staff had accepted the corollary that "only the minimum of forces necessary for the safeguarding of vital interests in other theaters should be diverted from Germany."³² The pitiful inadequacy of Allied strength in the Far East made imperative, even under these restrictions, the immediate dispatch thither of such minimum forces. Even so, there was in Washington too little intelligence concerning the fluid tactical situation to justify firm commitments. The disposition of additional forces must hinge upon a number of contingencies—particularly upon the situation in Luzon, Singapore, and the Netherlands East Indies at such time as the reinforcements should arrive.³³ Among the U.S. chiefs of staff there was a natural desire—prompted by humanitarian, strategic, and political considerations—to send aid to MacArthur's beleaguered army. In the course of the ARCADIA conversations, however, it became apparent that such assistance could not be sent directly to the Philippines. The exact day of that decision is difficult to determine, but before the conference closed it was accepted that the only hope was to channel reinforcements up through Australia, and that hope grew progressively dimmer.*³⁴ In the absence of naval supremacy, there was little utility in planting ground force garrisons in the Malay barrier in spots which the enemy might easily by-pass. The string of island bases which constituted the vital but tenuous air link between Hawaii and Australia did require troops for local defense. New Zealand was assigned responsibility for Fiji, and Australia for the ultimate protection of New Caledonia; but it was necessary for the United States to provide a large ground force immediately for the latter island.³⁵ Otherwise the prime necessity was for an early and substantial increase in air power—for local defense of the islands and for a striking force farther west. The AAF had—en route, at U.S. ports of embarkation, or earmarked for early dispatch to the Far East—a number of air units and about 400 planes.³⁶ Actually the chief difficulty lay in the shortage of shipping rather than of aircraft or crews; for, whereas heavy bombers could be ferried out, lighter planes and their crews, ground personnel, and supplies must proceed

* See above, pp. 232-33.

by the slow water route. The need was so desperate that on 12 January the U.S. chiefs of staff suggested a review of the shipping priorities just established for the Atlantic.³⁷ By reducing the size of convoys designed for Iceland and Northern Ireland and by reassigning the bottoms thus released, it was possible to find troop space for 21,800 men, including ground forces for New Caledonia and AAF personnel for the Far East area, and shipping space for the aircraft. This plan was adopted;³⁸ it retarded troop movements in the Atlantic and the shipment of lend-lease supplies to Russia, but it provided minimum forces for immediate defense against Japan.

Even after reinforcements for the Far East had been allocated and shipping priorities established, it would be a matter of weeks before they could be brought to bear against the enemy. In the meanwhile, the Allied cause could be strengthened by a more effective utilization of the forces already in the theater. The command structure which had been prescribed in ABC-1 provided little more than a loose collaboration of American, British, Australian, New Zealand, and Netherlands forces dispersed throughout an area of millions of square miles. In the face of the numerical superiority of the enemy's forces and of the effective synchronization of his operations in widely separated regions, it was imperative that the United Nations improve their system of control. General Marshall on 25 December pointed out the weakness of the current command structure and proposed the establishment of a single unified command for the Far East area.³⁹ There were objections of a practical sort which could be urged against any system which vested in one leader full control over the several arms of five nations, but the alternatives were so unpromising that Marshall's proposal was accepted.⁴⁰ Because of the predominant British Commonwealth interests involved, the United States accepted as supreme Allied commander Gen. Sir Archibald P. Wavell, whose appointment was announced on 3 January.⁴¹ His deputy commander and staff were chosen to give widest representation to air, ground, and naval forces of the interested nations. The directive under which Wavell was to exercise his powers was approved by the President and Prime Minister on 10 January.⁴² This document prescribed the relations which were to be maintained between the supreme Allied commander, the Anglo-American chiefs of staff, and the ABDA governments.* Its specific provisions were not always to pass unchal-

* American-British-Dutch-Australian.

lenged during the early months of successive defeats, but as the first test of the practicability of a combined war effort, the ABDA command was of signal importance.

The solicitude of the chiefs of staff for the problems of the Southwest Pacific stemmed from the fact that they considered the enemy's amphibious thrusts in that direction as his principal effort. They were not blind, however, to the gravity of the situation in China. The American administration had long recognized the resistance of the Chungking government as an obstacle to Japanese expansion, and had encouraged Chinese efforts by loans and since 6 May 1941 by lend-lease aid.⁴³ Later in the year the basis of aid had been broadened to include actual military support by the unofficial sanction bestowed on the American Volunteer Group (AVG) of combat pilots. Now, when Japan's new commitments in the Pacific should have brought hope to China, U.S. observers were finding that nation war-weary, her resistance weakening under pronounced material and moral deterioration.⁴⁴ China's own productive powers were slight and communications with the western world so poor that it was difficult to bolster that weakness by grants of munitions. Isolated from the other United Nations in the Far East, China had not been included in the ABDA area; her armies were directed by Generalissimo Chiang Kai-shek, and co-ordination of effort must be effected by mutual agreement.

The United States, both from long-standing sentiment and for reasons of immediate military expediency, wished to continue and to increase China's war effort; if that effort in itself bore little hope of ultimate victory, it promised at least to contain large Japanese forces and to constitute a continuous drain on Japanese resources. To provide a broad basis for our desired policy of immediate assistance to China, the U.S. chiefs of staff presented a plan which was approved on 10 January.⁴⁵ This entailed increasing the security and capacity of the Burma Road, and providing base facilities and technical services to the end that the Chinese combat operations might be made more effective. Specifically, the U.S. chiefs of staff proposed to appoint, with the consent of Chiang Kai-shek, a high-ranking military officer to act as the representative of the United States in China. He was to supervise lend-lease, to command (under the Generalissimo as supreme commander) all U.S. forces and such Chinese units as might be at-

tached to them, and to control the Burma Road. Base facilities in Burma were to be made available through liaison with the British. This latter prospect introduced a command problem which was to complicate operations throughout the war. American forces in Burma, and later in India, had as a primary mission the promotion of Chinese resistance, yet geographically they lay in an area of British control. For the moment a solution was found by stipulating that forces under the U.S. representative would serve under the over-all direction of Chiang Kai-shek in China, but under the ABDA command in Burma. Experience was soon to prove this arrangement unsatisfactory, but in January 1942 it seemed to offer a practical compromise between conflicting national interests.⁴⁶

Providing the Forces

The immediate deployments approved at ARCADIA were calculated in terms of the modest forces then available, but the long-term strategy was based upon most ambitious requirements in trained men and materiel. Hence as a prerequisite to the success of that strategy, Anglo-American leaders must establish a "continuous program to raise and equip the forces" envisaged. To match in materiel strength the Axis powers, long on a war footing, would have called for great productive efforts, but the plans adopted at Washington went far beyond that goal. Traditionally, the American mode of warfare depended upon a generous use of materiel; we had preferred prodigality in that respect to prodigal wastage of human lives. With that policy the British were in wholehearted agreement. Perhaps in both countries it reflected the democratic idea of the value of the individual citizen and the existence of a great industrial system, but with the British the policy was also a frank recognition of the overwhelming superiority in manpower enjoyed by the Axis and their satellite states.

In so huge a program as that contemplated the United States must play a paramount part. It must raise and equip tremendous forces of its own and it must contribute generously to the munitions needs of Britain, the Soviet Union, China, and other of the United Nations. Britain was to participate to the very considerable extent of her industrial capacity, but her industry was already strained and unable to provide for the nation's own needs in some categories; and there was the ever-present danger of a revival of large-scale German air attacks. Hence the greatest, though not the severest, burden fell upon the

United States. In the long run the success achieved in the production program was perhaps as vital a factor in victory as any other, and in some items, certainly, it was a matter of quantitative rather than qualitative superiority over German industry and technology. An over-all history of the war should then be as much concerned with those who made the weapons as with those who used them. Here it must suffice to indicate briefly the measures taken to increase the flow of aircraft and related materials, to divide these weapons between the using air forces as accepted strategy dictated, and to increase the size of the Army Air Forces.*

In production, as in military strategy, the policies inaugurated immediately after Pearl Harbor rested upon the solid foundations laid earlier. Under impetus of our own defense program, of foreign orders, and of lend-lease, the aircraft industry had increased its capacity and plans had been laid for further growth; machinery for allocations had long been in operation; and the Army Air Forces had been greatly increased in size. The chief need now was for an accelerated rate of expansion. A basic guide for this lay at hand in the Victory Program. In accepting AWPD/1, the Army air section of that program, Secretary of War Stimson had qualified his approval by the observation that the plan would be practicable only if the nation were at war.⁴⁷ Now that war had come, the whole of the national economy could be redirected toward the successful prosecution of military operations. As the President wrote Mr. Stimson on 3 January, "The concept of our industrial capacity must be completely overhauled under the impulse of the peril to our nation."⁴⁸

In its latest revision of AAF needs, AWPD/4, the Air Staff had requested an overriding priority for production of aircraft. This was not a practical solution; the fluctuating needs of a very complex war demanded a more flexible system. At ARCADIA, the Anglo-American planning committee suggested that, pending an early examination and revision of over-all needs by the military and of industrial capacity by civilian production experts, the Victory Program as it existed be taken as a basis for expansion. Rather than fix absolute priorities for the several categories of munitions, they wished to allocate resources for their manufacture in a sequence of limited schedules geared to the successive approved operations.⁴⁹ For Army air needs, this would give

* A more extended treatment of these problems is planned for a later volume devoted to the Zone of the Interior.

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precedence to heavy bombers for defense in this hemisphere and in the Pacific; and in the air assault on Germany, precedence over equipment for air support of a large ground force. The design for expansion suggested in AWPDP/1 was not incompatible with those suggestions, and the air requirements of that plan, as revised in London in September, were adopted as the general guide for production.

On 3 January President Roosevelt sent Mr. Stimson a list of munitions, with a directive that he achieve the schedules contained therein and consult with the Secretary of the Navy as to allocation between the using services. No relative priorities were suggested. Aircraft goals were as follows:⁵⁰

<i>Aircraft Types</i>	<i>1942</i>	<i>1943</i>	<i>Target Monthly Production</i>
Long-range, heavy, and medium bombers	11,300	30,000	3,000
Light, dive, and scout bombers	11,000	17,000	2,000
Pursuits	16,000	38,000	3,500
Observation and transports	6,700	15,000	1,500
Total combat	45,000	100,000	10,000
Trainers	15,000	31,000	
GRAND TOTALS	60,000	131,000	

For 1942, this meant increasing existing schedules from about 46,000 to 60,000. The figures for 1943 differed slightly from those sent to Congress by the President on 6 January, which called for 25,000 rather than 31,000 trainers.⁵¹ In either case they seemed prodigious, especially in view of equally impressive requirements for ground and naval warfare. With any reasonably calculated rate of wastage, the annual production schedules of 60,000 and 131,000 aircraft should easily meet the requirements agreed on at London—about 60,000 combat and 37,000 training planes for the AAF and 21,000 for the U.S. Navy, plus the British deficit of 13,553.

At the suggestion of the AAF, the following schedule of allocations of combat planes was agreed on by the U.S. services, and approved by the President on 14 January:⁵²

<i>Aircraft Types</i>	<i>1942</i>			<i>1943</i>		
	<i>Army</i>	<i>Navy</i>	<i>Total</i>	<i>Army</i>	<i>Navy</i>	<i>Total</i>
Long-range, heavy, and medium bombers	9,780	1,520	11,300	26,190	3,810	30,000
Light, dive, torpedo, and scout bombers	7,270	3,730	11,000	9,160	7,840	17,000
Pursuits	14,350	1,650	16,000	30,600	7,400	38,000
Observation and transports	3,430	3,320	6,750	12,260	2,740	15,000
TOTALS	34,830	10,220	45,050	78,210	21,790	100,000

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These figures included British contract and lend-lease orders, and since those were more numerous in Army-type planes, the division between the services was not as disparate as the table indicates. Allocation among the several United Nations was reserved for a fuller study of the problems involved.

For the present, however, there was need of an immediate adjustment in the allotment of planes according to current estimates of production rates. In each of the allocation agreements made or suggested before 7 December, the requirements of the AAF had been subordinated to those of the British. To the extent that such a policy had put tactical planes into the hands of an air force actually combating the common enemy, it was justified. With the United States now in the war, however, that policy had to be revised to provide for the AAF's immediate combat needs and for its approved expansion.

The issue was raised at the beginning of ARCADIA, when on 24 December Admiral Stark announced that in the future U.S. heavy bombers sent to the United Kingdom would be manned by American crews, and, when possible, be in organized units. Air Chief Marshal Sir Charles Portal pointed out that this was not in accord with previous arrangements, but he was assured by General Arnold that the proposal would not prejudice existing agreements, details of which were to be worked out soon.⁵³ Those details were incorporated into the so-called Arnold-Portal Agreement, signed on 13 January 1942.⁵⁴ The document listed by categories and by months the specific number of planes to be made available to Great Britain during 1942 from U.S. production. The totals called for 589 heavy bombers, 1,744 medium bombers, 2,745 light bombers, 4,050 pursuits, 402 observation planes, and 852 transports.* Trainers were dealt with elsewhere. The allocations were

* The full text of the agreement reads as follows:

Subject: Allocation of Airplanes—1942.

The following allocation of planes to Britain from production in the United States is agreed upon:

	<i>H.B.</i>	<i>M.B.</i>	<i>L.B.</i>	<i>Pursuit</i>	<i>Observation</i>	<i>Transport</i>
Jan.	15	65	173	200		39
Feb.	47	65	191	231		52
Mar.	20	94	170	316		112
Apr.	20	180	171	292		150
May	40	180	271	251		125
June	45	180	258	400		105
July	19	200	241	350	27	45
Aug.	64	180	301	460	80	43

contd.

to be subject to periodic readjustments when changes in attrition rates, in production estimates, or in planned deployments warranted reconsideration. The rigidity of this schedule appeared to some allocations experts sufficient to make the scheme impractical in the light of so many variable factors,⁵⁵ but the readjustment feature was to be its saving grace. When in February 1942 the combined Munitions Assignments Board was established,* the Arnold-Portal Agreement was accepted "for production planning purposes,"⁵⁶ and it served as a point of departure for later revisions. This agreement, it must be noted, was only bilateral. Existing commitments by each of the signators to other powers were still in force. For the United States the most important of these was the Soviet protocol, which remained the guide for deliveries to the U.S.S.R. until replaced by the Washington protocol in autumn 1942.⁵⁷

The increase in the number of aircraft scheduled for delivery to the AAF under the Victory Program called for a parallel expansion of the whole air organization. This meant an increase in the total troop basis, in the training program, and in the number of organized units. When war came, the AAF had an authorized strength of 348,535 officers and men.⁵⁸ Its training establishment was geared to an annual rate of 37,000 pilots and 110,000 technicians. This training schedule reflected the needs of the 84-group program, which had been publicly announced on 23 October but accomplishment of which had been effectively blocked by the shortage of combat planes. Of the 84 groups authorized, 70 had been activated, but in many cases little had been done beyond formal activation.⁵⁹ Relatively few of the groups were at table-of-organization strength in men, and few were fully equipped with modern aircraft. The Air Staff was faced with the problem of devising an orderly schedule which would provide aircrews and or-

	<i>H.B.</i>	<i>M.B.</i>	<i>L.B.</i>	<i>Pursuit</i>	<i>Observation</i>	<i>Transport</i>
Sept.	43	200	249	400	100	48
Oct.	73	200	257	400	100	46
Nov.	92	100	281	350	94	38
Dec.	111	100	182	400	1	49
	<u>589</u>	<u>1744</u>	<u>2745</u>	<u>4050</u>	<u>402</u>	<u>852</u>

The above allocation will be subject to readjustment at a later date when attrition rates, changes in production figures or changes in number of units in combat areas make it advisable.

The assignment of models to conform to the allocation listed above as attached hereto is also agreed upon.

The allocation of trainers will be dealt with separately.

* See below, pp. 256-57.

ganized units at a rate which would synchronize with the accelerating flow of materiel. Only in this fashion could be created the balanced air force demanded by the strategic plans.

By 23 December 1941 the Air Staff had agreed on a broad pattern of expansion. During 1942 the AAF should accomplish its 84-group program, meanwhile speeding up its training schedule to match the Victory Program of aircraft production. In 1943 the AAF should organize and train the groups called for in AWPDP/1 at normal (First Aviation) strength, and in 1944 at Second Aviation strength—that is, with an additional squadron for each combat group.⁶⁰ Within a few days, the goal for 1942 was raised and a 115-group program substituted for the 84.⁶¹ General Arnold on 7 January apprised the Chief of Staff of the aims of the AAF and requested authority to put the new program into operation.⁶² Once having fulfilled “the immediate and necessary commitments for theaters of operations and task forces,” he proposed to devote the major effort toward developing training facilities within the Air Corps. This would retard temporarily the rate of training in the Air Force Combat Command (AFCC), but once the program was in full swing it would relieve that command of all responsibility for individual and crew training and allow it to concentrate on operational unit training. Under the new arrangement Arnold proposed to reach an annual production rate of 50,000 pilots and 300,000 technicians by August and of 70,000 pilots and 500,000 technicians in 1943.

On 19 January the Secretary of War approved this program in a directive on expansion of the AAF during the calendar year 1942.⁶³ The authorized strength of the AAF, including arms and services, was increased to 70,914 officers and 997,687 enlisted men. Approval was granted for activating during the year 45 additional groups of designated types. These were to be at First Aviation strength and with the 70 existing groups would round out the 115 called for in the new program. The AAF was also directed to expand training facilities to make possible the goals General Arnold had desired for 1942 and 1943.

Some steps were taken immediately to launch the new program. The Flying Training Command was established on 23 January under the Office of the Chief of the Air Corps, with full responsibility for training pilots and aircrews.⁶⁴ The activation of approved units progressed rapidly; within two months some 30 groups had been added. The Air Staff, meanwhile, had already begun planning for a greatly augmented

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air force which could absorb in 1943 the tremendous flow of aircraft and aircrews. Just ten days after the 115-group program was authorized, the Chief of the Air Staff presented General Arnold with a plan for AAF expansion in 1943, recommending an increase of 109 combat groups.⁶⁵ By 5 February this 224-group program had been accepted in the AAF as a basis for further study.⁶⁶ The program was not formally approved until July, by which time several changes had occurred in the allocation of groups among the several combat types, and by September 1942 this schedule had in turn been supplanted by the 273-group program. But inasmuch as long-range allocation and deployment plans for some months after ARCADIA were based on anticipated forces of 115 groups by 31 December 1942 and of 224 groups a year later, it is convenient to summarize here the unit status at the several pertinent dates.⁶⁷

Type of Group	Aircraft per Group		Groups on Hand, 19 Jan. 1942	Groups Authorized 19 Jan. 1942	115-Group Program	Proposed Increase 1943	To be Attained by 31 Dec. 1943
	1st Aviation Strength	Augmented Strength					
Heavy Bombardment	35	55	14	20	34	32	66
Medium Bombardment	57	69	9	5	12	6	18
Light Bombardment	57	57	5	3	10	20	30
Pursuit	80	105	26	7	31	27	58
Transport	35	55	6	6	12	12	24
Observation	55	57	10	4	16	12	28
TOTALS			70	45	115	109	224

Permanent Machinery for Military Control

On 1 January 1942, twenty-six nations through representatives assembled in Washington pledged their mutual co-operation against the Tripartite powers to the extent of their respective military and economic resources.⁶⁸ In manpower and industrial capacity, if not in current military strength, the United Nations were vastly superior to the Axis powers. But whatever public statements might be made about common ideals, the twenty-six members of the new organization had separate national interests, sometimes widely divergent or even conflicting; material advantages might easily be dissipated by the lack of unity usually inherent in a military coalition. In his address to the Congress on 6 January, President Roosevelt promised that "we shall not fight isolated wars—each nation going its own way." He referred to measures already taken to insure cohesive efforts—current military discussions and the unified command in the Southwest Pacific—and said: "There will be a continuation of conferences and consul-

tations among military staffs, so that the plans and operations of each will fit into a general strategy designed to crush the enemy." ⁶⁹

The vast amount of important business accomplished at ARCADIA gave evidence of the utility of periodic meetings of government chiefs with their principal military and civilian advisers. Hence there followed, after the pattern set at the Atlantic conference and ARCADIA, a series of meetings, from Casablanca to Potsdam, at which the major issues of the war were settled. In some of the conferences, the Soviet Union, China, and other United Nations participated, but usually the function of the meetings was to serve as a clearing house for Anglo-American plans. Ultimate decisions on major military policies were taken by President Roosevelt, as Commander in Chief of the U.S. forces, and by Mr. Churchill as British Prime Minister and Minister of Defense. Each of those leaders was inclined to assume a more active part in framing military strategy than was conventional with civilian officials in their respective states, and it was highly desirable that they be served by a common staff organization. The basic elements for such a body existed already in the U.S. Joint Board and the British Chiefs of Staff Committee, with their staff organizations, but inasmuch as those bodies sat respectively at Washington and London, some practical form of liaison was required. In ABC-1 it had been suggested that this be achieved by the exchange of permanent military missions. The suggestion had been carried out in 1941 with the establishment of the U.S. Special Observer Group in London and the British Joint Staff Mission in Washington.⁷⁰ There remained the task of perfecting this initial machinery, including the subsidiary staff agencies, and of regularizing procedures. These goals were achieved during the weeks following the Washington conference, and during the same period significant changes occurred in the organization and command structure of the armed forces of the United States. To some extent the latter changes were brought about by conditions peculiar to the U.S. services, but they were profoundly influenced by the new Anglo-American staff organization. And in each case the status of the AAF was improved.

In consonance with their previously declared interest, the British chiefs of staff on 10 January presented to their American opposite numbers a memorandum on post-ARCADIA collaboration.⁷¹ The paper, suggesting the establishment of a permanent staff organization, was discussed in detail, revised by the U.S. chiefs of staff, and at the

last ARCADIA session on the 14th was submitted to the President and Prime Minister.⁷² Although the principal features of the plan were never challenged, it was subsequently revised in a draft of 24 January and adopted on 10 February.⁷³ This final version formed, as it were, the constitutional framework for the combined direction of the war; and in view of the remarkable success of Anglo-American collaboration, it may be considered as one of the most significant documents in the long history of military alliances.

The most important element in the new machinery was the Combined Chiefs of Staff (CCS). Actually, that body had existed at ARCADIA; what was new was the designation and the provision for continuous rather than periodic sessions. In choosing the title, American rather than British usage was followed: the term "combined" was officially defined as connoting collaboration between two or more of the United Nations, "joint" as connoting collaboration between two or more services of a single nation. This provided a more precise designation than had existed before, though in respect to the subsidiary agencies it reversed rather than confirmed earlier practice; thus the group which had been commonly referred to as the Joint Planning Committee now became the Combined Planning Staff (CPS).

The Combined Chiefs of Staff was to sit normally in Washington, with regularly scheduled meetings. It was to consist of the United States chiefs of staff and the British chiefs of staff or, in their absence from Washington, of their duly appointed representatives. For the British this meant dual representation. Their members of the CCS were Adm. Sir Dudley Pound, Gen. Sir Alan Brooke, and Air Chief Marshal Sir Charles Portal, representing the three services, and Field Marshal Sir John Dill representing Mr. Churchill as Minister of Defense. Sir John Dill was to remain in Washington after the departure of his three colleagues, and with him were to act, vice those members, the British Joint Staff Mission—Adm. Sir Charles Little, Gen. Sir Colville Wemyss, and Air Marshal Arthur T. Harris. The United States members consisted of Adm. Harold R. Stark, Chief of Naval Operations; Adm. Ernest J. King, Commander in Chief, U.S. Fleet; Gen. George C. Marshall, Chief of Staff, U. S. Army; and Lt. Gen. H. H. Arnold, Chief, AAF and Deputy Chief of Staff, U.S. Army.

The use of the existing British Chiefs of Staff Committee as a model for the new organization raised two awkward questions. In the British system, the RAF enjoyed the same status as the older services, with

parity in cabinet representation and in military command; in the American organization, the AAF was only a part of the Army. British practice had prevailed at ARCADIA to the extent that AAF members had met, in each committee, with their British counterparts and on terms of quasi-equality with U.S. Army and Navy members. That arrangement was perpetuated in the appointment of General Arnold to the Combined Chiefs of Staff, though he was officially a *deputy* chief of staff. In the second place the American members had not liked the idea of including in the CCS a special representative of the Minister of Defense, since the ready access to the President of such a personal representative of Mr. Churchill might make difficult the maintenance of normal military channels of communication and control. The arrangement was later equalized by the appointment in July of Adm. William D. Leahy as personal chief of staff to President Roosevelt in place of Admiral Stark.⁷⁴ It was apparently the influence of the CCS organization which determined the formation of the U.S. Joint Chiefs of Staff (JCS), made up of the four American members. There was no official charter establishing this committee,⁷⁵ but by the end of February it had assumed responsibilities toward the American war effort comparable to those of the CCS at the combined level.

For the CCS, responsibilities were specifically enumerated.⁷⁶ They were to include, under the heads of the two governments, the formulation and execution of policies and plans concerning: (1) the strategic conduct of the war; (2) a broad program of production conceived in terms of that strategy; (3) allocation of raw materials and weapons; and (4) assignment of shipping for personnel and materiel. Procedure in carrying out these tasks had already been described in the directive issued to the supreme Allied commander of the ABDA area.⁷⁷ On all important military matters outside the jurisdiction of the theater commanders, the Combined Chiefs were charged with developing recommendations and submitting them to the President and Prime Minister for approval. The issues under consideration might originate with the theater commanders, with the government of any of the United Nations, with the U.S. or British chiefs of staff, or eventually with their subordinate agencies. The functions of the CCS (and similarly of the JCS) were properly staff rather than command. Ultimate decisions, of course, lay with the President and Prime Minister, and the execution of the enforcing directives was a responsibility of a

theater or continental commander. Yet to an important degree the broad direction of the war strategy was the work of the Combined Chiefs themselves. This meant, save for the final decision by the civilian government chiefs, that the war effort was controlled by a committee. The faults inherent in committee rule were not always absent. It is difficult to achieve perfect unanimity of opinion among eight strong-minded men, each accustomed to command and each motivated by a different combination of national, service, and personal factors. Yet on each issue, agreement—or consent—was desirable; there was no formal voting or majority rule. In view of the paralyzing possibilities of what amounted to the *liberum veto*, it was fortunate that, whatever clashes of opinion may have occurred, the members of the CCS were able in most issues to compromise their several suggestions in a decision that could be accepted by all. One fact of extreme importance for the United States was that the membership of the Joint Chiefs of Staff remained unchanged, after the appointment of Admiral Leahy, until after the war ended; this continuity in personnel, so unusual in a military body, contributed much to smoothness of operation of the JCS.

In the interests of efficiency it was desirable that the Combined Chiefs of Staff be provided with permanent staff sections. The British paper on post-ARCADIA collaboration had designated several of the required agencies, again based on British models, and these were set up by CCS directives at the time that body achieved its formal organization. For the most part the new offices merely continued, in a more formal guise and under new designations, the machinery which had grown up at ARCADIA. The form the new sections assumed then was that of Anglo-American committees rather than of the conventional "G's" of the U.S. Army General Staff.

Although there was no hierarchical arrangement of the several sections, those being coequal in status and on terms of mutual interchange of communication, the Combined Planning Staff occupied a central position vis-à-vis the Combined Chiefs of Staff.⁷⁸ That section, which had operated at ARCADIA as the Joint Planning Committee, was charged with preparing such studies and plans as the CCS should direct. Its membership included the chief planning officers of the U.S. Army, Navy, and AAF, and similar representatives of the British services. The American members, when sitting separately, constituted also the U.S. Joint Planning Staff.

The new Combined Intelligence Committee also continued an existing organization.⁷⁹ The American members, who formed the U.S. Joint Intelligence Committee, consisted of the directors of intelligence from the Army, Navy, and AAF, and representatives of the Department of State, the Board of Economic Warfare, and the Coordinator of Information. A full-time committee was also appointed to work permanently with the British Joint Intelligence Committee in Washington.

The Combined Military Transportation Committee (CMTC) was to advise the CCS on transportation problems involved in their various projects, especially in respect to requirements for overseas movements.⁸⁰ For any contemplated operation, the American and British members were to determine the shipping which could be made available by each nation through consultation respectively with the War Shipping Administration and the Ministry of War Transport. Where combined use of shipping was involved, any adjustments necessary should be referred to the Combined Shipping Adjustment Board. Where lack of shipping or kindred factors (rail, port, etc.) threatened to strangle an approved plan, the CMTC with the CPS were to report to the Combined Chiefs to obtain the requisite priorities. American membership consisted of the War Department's G-4 and his chief transportation officer, a representative of the AAF, the director of the Naval Transportation Service, and his planning officer.

In view of the acute problems of distribution of air materiel, the combined Munitions Assignments Board (MAB) was of special importance to the AAF.⁸¹ This extended to British as well as American production the idea of inter-Allied control which had been functioning since 1940, but which was now made even more necessary by the adoption of the Victory Program. The mission of the MAB was to keep current estimates of U.S.-British munitions resources, considering such variable factors as production achievements, materiel reserves, rates of wastage, combat forces, shifts in strategy, etc.; and, on the basis of these estimates, to recommend to the CCS schedules for the allocation of materiel among the United Nations. Separate boards sat in Washington and London to assign respectively munitions produced in the United States and United Kingdom. A civilian, Harry L. Hopkins, headed the board in Washington, which included representatives of the Army, Navy, and AAF, and of the three British services. It was a token of the importance of this board to the AAF that

its member was the Chief of the Air Staff, Maj. Gen. Millard F. Harmon. He served also as chairman of a subsidiary group, the Munitions Assignments Committee (Air), and the AAF in this body continued to play the important role it had previously enjoyed in the Joint Aircraft Committee.⁸²

As the war went on, the combined and joint machinery grew more complex, the size of its personnel greater. It could not, in the nature of things, wholly escape the taint of bureaucracy, and that its officers could partially escape the standard "battle of the Pentagon" jokes was perhaps due to the fact that they were more often housed in another building. But the war, being global, was also complex and great in size; the task of planning operations and deployments in every continent, of finding resources and establishing relative priorities—this required a staff organized on a scale and in a manner hitherto unknown in the United States. Perhaps the magnitude of the task can be fully appreciated only by those who have made an intensive study of the files of the Combined and the Joint Chiefs of Staff. The responsibility for keeping those records, incidentally, was no light one. It was vested, at the two levels, in the Combined Secretariat and the Joint Secretariat, which prepared and circulated the various draft and final papers and which kept a permanent record of the proceedings at staff meetings. Here again initial British influence was strong.⁸³

The establishment of the new machinery for combined and joint control of the war effort did much to secure for the air arm a position commensurate with its growing size and power through the inclusion of AAF representatives in each new agency. Concurrently, the War Department was undergoing structural modifications which contributed to the same end. The reorganization which went into effect on 9 March 1942 was the fruit of months of study and debate precipitated by the military crisis of 1940-41; to understand the issues involved, it is useful to recall briefly the nature of the Army's administrative machinery when mobilization began. At that time most responsible leaders within the War Department were agreed that the existing organization was ill attuned to the needs of modern war—specifically that reforms should be instituted which aimed at decentralization of staff work in Washington, at unity of command in the field. In practice, those principles were difficult to reconcile, and among the several agencies concerned there existed wide differences

of opinion as to the most feasible solution for each. The reorganization of March 1942 was essentially a compromise, a wartime expedient which postponed rather than effected a final settlement. The immediate background of this temporary solution may be sought in a three-cornered struggle between the General Staff's War Plans Division, General Headquarters, and the Army Air Forces. Much, though certainly not all, of the controversy turned on the relation of the air arm to the military establishment.

General Headquarters was of recent origin, but the desirability of such a staff in the event of war had long dominated Army thought. The Harbord Board of 1921, drawing on the experience of the AEF in 1917-18, had recommended establishment of a staff comparable to Pershing's GHQ which should channel War Department activities into the theater of operations. The core of this headquarters was to consist of the General Staff's War Plans Division—indeed it was in anticipation of such an eventual function that the latter office had been created and charged with the preparation of over-all strategic plans. Modified in detail in 1936, the Harbord plan assumed that at outbreak of war the Chief of Staff, or some other commander designated by the President, would lead the field forces with a reinforced WPD as his general headquarters. When Nazi victories of the spring of 1940 lent urgency to the mobilization of American military forces, an initial step toward realizing this design was taken by the activation, on 26 July, of a "nucleus of GHQ." Its original mission was to direct the training of the tactical units of the Army, found in the main in the four field armies, the armored force, and the GHQ Air Force.* General Marshall delegated effective control of GHQ to its chief of staff, Brig. Gen. Leslie J. McNair, under whose able leadership a small group of officers undertook the complex task of organizing and training the fast-growing Army.⁸⁴

A year later, on 3 July 1941, the mission of GHQ was extended to include also the planning and command of operations; in General Marshall's words, "GHQ now supersedes War Plans Division in the organization and control of task forces and operations."⁸⁵ This was in accord with the original intent, but the new arrangement did not prove satisfactory. The Harbord report and the subsequent modifications of 1936 had conceived of a war involving a concerted effort in

* The last term is confusing, since it referred to an organization which had been established in 1935, five years before the activation of GHQ itself.

a single theater; in the summer of 1941 both the European Axis and Japan loomed as probable enemies and responsibilities for hemisphere defense involved the establishment of widely scattered bases and defense commands. Anglo-American plans had envisaged the establishment of several theaters of operations, but firm commitment of the field forces must depend in the initial stages of war upon enemy strategy. Under these circumstances it did not seem wise for either General Marshall or GHQ to take the field. War Plans Division was never incorporated into GHQ and remained a potential rival to that staff in spite of the directive of 3 July.⁸⁶

That directive proved difficult to follow, since some of the functions and powers prescribed therein were contingent upon unpredictable circumstances. From the date of its issue, General McNair considered the authority granted GHQ unequal to the new responsibilities, and on 25 July he requested an extension of his powers. The chief difficulty lay in his lack of control over supplies, a weakness he thought fatal to effective planning for, and command of, task forces. Competing with the Navy and lend-lease for material resources, the War Department was unwilling to relinquish its control over this essential factor. Thus it was with restricted authority that GHQ, in the months just before and after Pearl Harbor, planned operations and dispatched task forces, some of which have been mentioned in earlier passages of this chapter. But however important the matter of supply may have been to GHQ, the issue of most immediate concern to the Army air arm was its own relation to the new agency.

That conflict would arise between the air force and a GHQ dominated by ground officers was to be expected; what occurred was no more than a new phase of the dispute which had defied solution for two decades. Widespread recognition of the importance of air power in the European war and General Marshall's sympathetic attitude toward the Army's air arm encouraged those officers who were dissatisfied with the organizational compromise of 1935. Rather than return to the public campaign for a separate department of air, they now directed their efforts toward securing greater powers within the War Department. In these efforts they were opposed by GHQ as they had earlier been by the General Staff, but the alignment was now less uneven. The appointment of General Arnold as Deputy Chief of Staff in October 1940 gave him immediate access to the Chief of Staff; and, if the new office was not in the same chain of command as Arnold's

position as Chief of the Air Corps, it nevertheless lent additional weight to his persistent efforts.

One significant instance occurred soon after GHQ was established. As Chief of the Air Corps, Arnold promulgated on 14 August an elaborate training directive for the GHQ Air Force. Although GHQ had been made responsible for the training of all combat units, and on 19 November was specifically given "direct control" over the GHQ Air Force, the directive was allowed to stand. Thereafter General McNair exercised hardly more than a nominal supervision over air training.⁸⁷ This *de facto* situation was legalized in the revision of Army Regulation 95-5 on 20 June 1941,^{*} whereby the Army Air Forces was established and its Chief, General Arnold, was given control over both unit and individual training.⁸⁸ General Headquarters' responsibility for air force training was limited to combined air-ground operations.

If AR 95-5 clarified the training issue, it evoked more serious problems concerning the planning and control of air combat operations when, a fortnight later, GHQ was made responsible for those functions. One purpose in creating the Army Air Forces was to eliminate internal friction between combat and service agencies, a hope which did not materialize.⁸⁹ In broader context, the move was one phase of the current trend toward "streamlining" the organization of the War Department. The Secretary of War had approved "decentralizing our staff work to permit Air Force autonomy in the degree needed," while opposing "segregated independence."⁹⁰ Certainly the powers given to General Arnold as Chief of the Army Air Forces constituted the greatest single step toward autonomy as yet taken. He was charged with control over the Air Force Combat Command, successor to the GHQ Air Force, and over the Air Corps.⁹¹ Specifically, his duties included determining requirements for the AAF and the "preparation of necessary plans for the development, organization, equipment, training, tactical operations, supply, and maintenance thereof, including overseas garrisons and task forces for theaters of operations and the assignment of personnel and matériel thereto."⁹² Through its commanding general, he controlled "all aerial operations" of the Air Force Combat Command save for units assigned or attached to task forces, overseas garrisons, or other commands, and on direction of the Chief of Staff was responsible for plans for the air defense of the United

* See above, p. 115.

States.⁹³ To those most intimately concerned, this directive and that of 3 July extending the responsibilities of GHQ might seem to overlap in respect to authority for operational planning and control. Divergent attitudes toward the role of air power made difficult any substantial agreement. The newly created Air Staff clearly indicated a desire to extend the powers of the AAF along lines parallel, rather than subordinate, to those of GHQ. Such action would have in effect reduced GHQ to a ground force command, a trend which its leaders objected to but which seems to have been acceptable to WPD. In these circumstances, there was then much to justify WPD's judgment that relations between General Headquarters and the Army Air Forces were "indefinite and unsatisfactory."⁹⁴

General McNair was determined to preserve the authority of GHQ against threatened encroachments from the AAF. Early in July he secured from General Arnold an oral disclaimer of any intent to infringe in the realm of operational command; the latter wrote, confirming his declaration, "There is no thought of aerial combat operations controlled by the Air Force Combat Command, coincident with similar operations controlled by a theater commander."⁹⁵ Nevertheless, McNair seems to have felt that the AAF was striving for independent command; apropos of a reorganization suggested by WPD he commented that "the Chief of the Army Air Forces does not command the aviation of overseas garrisons—at least not yet."⁹⁶ On 15 August, McNair defined in detail his concept of the relationship between the AAF and GHQ in a memorandum specifically calculated to prevent any intrusion on the latter's authority over operational planning and control.⁹⁷ His anxiety was not ill founded; already the War Department had initiated deliberations which were to result, some seven months later, in the abolition of GHQ and the extension of air force authority. In its efforts toward that end, the AAF received effective support from WPD.

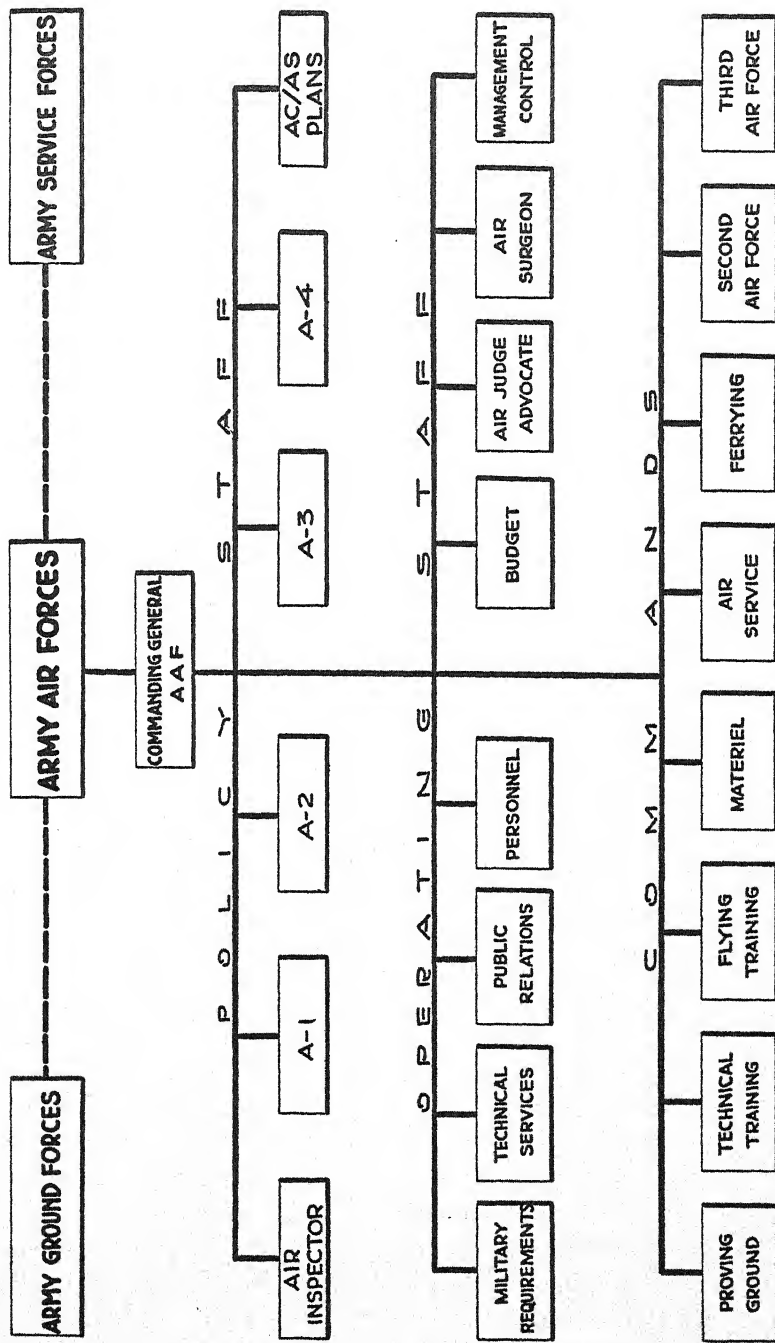
Wishing to settle the broad issues raised by the directive of 3 July and General McNair's criticism thereof, General Marshall appointed a board representing GHQ, the several sections of the General Staff, and the Army Air Forces. Convened on 14 August, the board soon recommended "a major reorganization of the War Department."⁹⁸ Two alternatives seemed possible: to increase the powers of GHQ along lines which McNair had suggested; or to reduce it to a ground force command comparable to the AAF and add a service of supplies.

War Plans Division suggested the latter solution in August, then turned to fruitless efforts to reach an agreement by modifying the present formula.⁹⁹ By September, General McNair had become skeptical of the possibility of securing the authority requisite for effective functioning of his office.¹⁰⁰ From the August deliberations on, the AAF favored drastic reorganization. On 6 October the Air Staff prologued for duration of the emergency all attempts to secure complete independence of the air force.¹⁰¹ This decision served merely to concentrate all efforts toward achieving a parity with the ground forces, which seemed impossible of attainment under the present status and constituency of GHQ. During the late summer and early fall, various expedients were examined by members of the Air Staff and by consultants drawn from the Bureau of the Budget.¹⁰² On 24 October General Spaatz, Chief of the Air Staff, forwarded to WPD a vigorous objection to the existing organization, recommending the abolition of GHQ and the establishment, under the Chief of Staff and a compact General Staff, of autonomous air, ground, and service forces. This proposal met with "100 per cent non-concurrences."¹⁰³ A month later, on 25 November, General Arnold recommended to the Chief of Staff a reorganization of the War Department along similar lines and the creation of a military policy staff for the President which should include members from the several services and appropriate civilian agencies.¹⁰⁴ The second part of this scheme lay entirely outside the jurisdiction of General Marshall; but he was "favorably impressed" by Arnold's design for the War Department, and on 28 November he directed WPD to develop a detailed plan incorporating its principal features.¹⁰⁵

Brig. Gen. Joseph T. McNarney, an air officer who had been drawn into the General Staff under the recent liberalizing policy, was put in charge of the project. He was recalled from his current assignment with the special observers in London, arriving in Washington just after the Japanese attack in the Pacific and just in time to be named to the Roberts Commission to investigate the disaster at Pearl Harbor.¹⁰⁶ Thus delayed, it was early February before McNarney's group had determined the general character of the reorganization. The views of the AAF were presented to McNarney by a special committee appointed by Arnold and headed by Lt. Col. B. E. Gates.¹⁰⁷ General Headquarters was not consulted until 5 February, but General McNair had long since been convinced of the impractical nature

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of the existing system and raised no objections to the proposed changes.¹⁰⁸ The results of the deliberations of McNarney's committee were incorporated in War Department Circular 59, issued on 2 March 1942 and effective on 9 March. As a circular, its provisions lacked permanent validity.

The new directive abolished GHQ. The field forces remained under the control of the General Staff, and the War Plans Division (later OPD) assumed planning and operational functions over all theaters of operation and the four defense commands. To care for Zone of Interior functions, three autonomous and co-ordinate commands were established under the Chief of Staff—the Army Air Forces, the Army Ground Forces, and the Services of Supply (later Army Service Forces). The General Staff was reorganized to include a more equable proportion of air officers. This arrangement removed a long-standing grievance by giving the air arm equal status with the ground arm, if not with the Army itself. It did away, too, with the internal friction which had stemmed from the ambiguous division of authority between the Office of the Chief of the Air Corps and the Air Force Combat Command. Those agencies indeed were eliminated in the new AAF, and the functions of the former were divided between a reorganized Air Staff and a number of subordinate commands in the Zone of Interior. As for the AFCC, its very *raison d'être* had disappeared during the early months of the war. Of the four continental air forces previously assigned to it, the First and Fourth had been turned over to the Eastern and Western Defense Commands, respectively, and the Second and Third had become essentially agencies for unit training.¹⁰⁹ For all his elevation from Chief, AAF to Commanding General, AAF, Arnold had been shorn of the limited combat functions he had previously enjoyed by virtue of his control over the Combat Command.

Ostensibly, the Army Air Forces had been reconstituted merely as a supply and training agency. That fact may have been overlooked by the casual reader of public announcements of the new "streamlined" War Department organization, which according to one journalist was so pleasing to air officers that they "practically trod on air."¹¹⁰ But the limitation was clearly indicated in the new statement of the AAF mission—"to procure and maintain equipment peculiar to the Army Air Forces and to provide air force units properly organized, trained and equipped for combat operations." In theory it was only through War Plans Division that Arnold, as Commanding

General, AAF, could affect the planning and control of combat operations.

In reality the influence of AAF Headquarters on the actual conduct of the war went far beyond a literal interpretation of Circular 59. Here, as so often in the course of the war, it proved impossible to separate multiple functions held by one person, and what Arnold could not do as Commanding General of the AAF he might accomplish as Deputy Chief of Staff. In that capacity he had helped frame military policy during the months before Pearl Harbor; he had attended the Atlantic conference; and he had sat sometimes—not always—in the President's unofficial War Council.¹¹¹ During ARCADIA, Arnold had acted as one of the Anglo-American chiefs of staff; and with the formation in February of the CCS and JCS he was designated unequivocally as a member of each. There was still a curious anomaly in his situation. Within the War Department, Arnold was subject to Marshall as Chief of Staff, and though the latter had long since proved his interest in the cause of air power and had favored Arnold's inclusion in the CCS,¹¹² there were still the stubborn facts of seniority and rank: Arnold had only received his third star with the advent of war and was not to be made a four-star general for another year.¹¹³ Within the CCS and JCS there was no hierarchy and legally, at least, the Commanding General of the Army Air Forces, the Army Chief of Staff, and the Chief of Naval Operations shared equal responsibilities and powers. And it was as a member of those committees rather than as commander of the AAF *per se* that Arnold was to exert his most important influence in the air war.

This tendency reached on down into the Air Staff. The policy initiated in AR 95-5 of giving the AAF representation in the General Staff was extended in Circular 59; the ultimate objective was that roughly half the members of that body should be air officers.¹¹⁴ If this looked on paper as an equitable solution, it was not wholly satisfactory to the Air Staff. Perhaps the crux of the matter lay in the relationship between AWPD and WPD, with its peculiarly important influence in formation of strategic policies and in the conduct of operations. In October 1941, AWPD had objected that WPD was trying to monopolize planning functions which were more appropriate to the Air Staff and suggested that responsibilities for planning be divided along functional lines between the two offices.¹¹⁵ This was in reality an effort to establish two distinct and correlative agencies; the same attitude

had been manifested in the fashion in which the Air Staff had compiled AWPD/1 in August,* and it was to be more pronounced after the reorganization of 9 March 1942. The fact that in the several staff committees ancillary to the CCS and JCS the AAF members were peers of their Army and Navy opposite numbers encouraged that attitude, which had been tacitly supported by the War Department on 2 December when it authorized the Air Staff to communicate directly with the air staff of the British Joint Staff Mission.¹¹⁶

An astute English member of one of the staff sections serving the CCS was once contrasting, from his own wide experience, the different fashion in which his British and American colleagues interpreted their functions.¹¹⁷ It was his contention that in such an agency—say, for example, the Combined Planning Staff—the British members acted as a team with full authority to resolve differences of opinion without consulting their respective service chiefs and thus were able to present to the Combined Chiefs a single approved report. Conversely, he thought the American members brought to a meeting the opinions of the heads of their respective services, and lacked power to compromise those opinions without reference to higher authority. His explanation for the difference he believed to exist was succinct:

You see, fundamentally, you have a system of dictatorship. Your three Service chiefs are dictators. So far as the Navy is concerned, Admiral King, as you know, is not only Chief of the Naval Staff, but also Admiral of the U.S. Fleet. He can do anything he likes with the Fleet—make everybody stand on their heads if he wants to, sack anybody at a moment's notice. The same applies in the other Services. General Arnold's control of the U.S. Air Force is as complete, virtually, as is Hitler's control of Germany. He is a complete dictator. Now, under that system...everybody's career from the bottom upwards depends on his pleasing the man above him, and as they rise, the answer is, "Do what Arnold wants and you will get on in the Air Corps." Be discovered doing something Arnold does not like and Arnold sacks you—like that.

These observations were made at the height of the air war in Europe; they were made informally and with some pardonable exaggeration to emphasize an argument. Sober judgment could no more confirm the purported dictatorial powers of the service chiefs than it could transform the genial "Hap" into a Fuehrer. But it was significant that to an observant ally the U.S. service commanders possessed widest powers, and that in that respect the AAF differed not at all from the U.S. Army and Navy.

* See above, pp. 146-47.

One factor which affected the direction of air combat operations had no reference to the text of the new circular. That was the personal relation of General Arnold to air force commanders in the theaters and in continental commands. Such a factor is by nature imponderable, difficult either to describe or to document; but something of its flavor may be sensed in a perusal of the extensive correspondence between Arnold and air force commanders in the theaters—particularly in the “operations letters” which flowed regularly between the combat zones and Washington. There was in this correspondence no violation of the conventions of military channels; rather it constituted an effort, attended by varying degrees of success, to inform, encourage, and often to placate AAF generals scattered throughout the world. In an officer corps as small as was that of the prewar Air Corps, it was natural that all senior officers be acquainted. If this heightened at times the understandable rivalry among air commanders for the inadequate forces and supplies available, it also made possible a certain indirect control from Washington through letters written more often in the “Dear Tooley” or “Dear Miff” tone than in approved AGO style.

Thus in practice the Army Air Forces and its commanding general came to assume a role far more important than that prescribed in the reorganization of 9 March 1942. AAF officers were schooled to avoid use of the term “independent air force,” but in most important respects the AAF enjoyed tacitly a quasi-equality with the Army and Navy rather than the parity with the AGF and ASF which was its legal status. On 15 June the War Department, in a revision of AR 95-5, repeated the definition of the AAF mission as it had been carried in Circular 59. A few days before, the Chief of the Air Staff had written that “the main objective of the Army Air Forces is to operate effectively against the enemy the maximum number of organized units and airplanes possible.”¹¹⁸ This was a much broader interpretation of functions than that which had been officially designated to the AAF. In general it was also a more accurate description of AAF activities. Something of those activities may be seen in the following chapters which describe the manner in which the strategy laid down at ARCADIA was carried out in the several theaters.

SECTION III

* * * * *

*TACTICAL DEMANDS:
CONCENTRATION VERSUS
DISPERSAL OF FORCES*

CHAPTER 8

* * * * *

AIR DEFENSE OF THE WESTERN HEMISPHERE

AN ORDER flashed to air defense units in California shortly after noon on 7 December 1941 brought word that the Japanese had attacked Hawaii, that 700 miles west of San Francisco a transport had been sunk, that by direction of the Secretary of War RAINBOW No. 5 had been put into execution, and that all bases were to be alerted for attacks by air or ground.¹ That order was typical of many which on that day brought the war home to the United States and its key outposts throughout the Western Hemisphere. Overnight, air raid alerts and blackouts became routine in American cities, as the average citizen assumed the additional duty of air raid warden. The success of the attack on Hawaii had put the United States on the defensive and suggested that the homeland itself was not beyond the range of similar carrier-borne air assaults. For the first time since the War of 1812 the country faced a serious threat of attack.

Estimates of the seriousness of the threat to continental United States varied widely with the perspective of the men who made them. Military planners, thinking in terms of world-wide strategy, were apt to minimize a danger which to an individual in an exposed community appeared to be highly personal and threatening. This emotional element in the situation, the feeling that it took only one bomb to wipe out a home, meant that in continental defense political factors were no less important than strictly military considerations. The initial reaction of the people in one of the more exposed areas was described in an account written on 10 December 1941 by Richard L. Neuberger, Oregon journalist: "People who had pooh-poohed any hint of peril on Saturday kept their children home from school on Monday." While

Mr. Neuberger wrote, the Northwest was blacked out from Puget Sound to southern Oregon, radio stations had been off the air for sixteen hours, and enemy aircraft were reported near the mouth of the Columbia River. It was not known whether the reports of enemy activity were founded on fact or rumor, but "men and women whose Congressional representatives less than a month ago voted overwhelmingly against repeal of the Neutrality Act are now prepared to believe such reports implicitly." And on the preceding night "store windows in Seattle which did not dim were smashed by irate citizens."²

An official estimate of the danger was given to the nation by President Roosevelt in a radio address on 9 December.³ The Chief Executive admitted that the losses at Pearl Harbor constituted a serious setback and bluntly told the people to prepare for a long war against powerful foes. He warned that the initial attack could be repeated "at any one of many points in both oceans and along our coast lines and against the rest of the hemisphere." Summing up the terrible lesson which had been contained in the rain of bombs on American ships and planes in the Pacific, the President suggested that it ought to be clear to every citizen "that our ocean-girt hemisphere is not immune from severe attack—that we cannot measure our safety in terms of miles on any map." At the same time, Mr. Roosevelt outlined views which were to be reiterated through the discouraging months of the first half-year of disaster and retreat, namely, that although the country might be attacked, nothing must deter the nation from its principal job of preparing to take the war to the enemy.

Supporting the apprehensions of the people and the President's warning, there were sober estimates of the situation by responsible military leaders. As early as 8 December, the Navy reported that the losses sustained in Hawaii had left the Pacific Fleet unable to carry out the tasks assigned to it in the existing war plan,⁴ and the next day Secretary Stimson reported to President Roosevelt that the War Department plan for the defense of the Pacific coast had been based on the security provided by Hawaii and the fleet, and that "the present attack has left the West Coast unprotected."⁵ There was felt to be a grave possibility that the Japanese might, by renewed attacks, capture islands in the Hawaiian group⁶ and thereby penetrate the Pacific defense triangle (Alaska-Hawaii-Panama). Even without reducing Hawaii, the enemy was in a position to carry out raids against aircraft plants and ship-building installations along the Pacific seaboard.⁷

The same grave view of the situation had been adopted by the Air War Plans Division of the Air Staff in an estimate drafted on 8 December. Word had been received that the attack on Pearl Harbor had left only one battleship in complete readiness there. This drastic shift in the balance of sea power had exposed the Pacific coast and, in conjunction with the existing uncertainty over the status of the French fleet, meant that a world-wide change in naval potentials had occurred. Even the sea lanes in the North Atlantic appeared to be open to raiders, with consequent peril to Iceland, Greenland, and defense plants along the eastern coast of the United States.⁸ The loss off Malaya on 10 December of the British capital ships *Prince of Wales* and *Repulse* added to the pessimism. An air estimate of the situation two days later concluded that the enemy could reach virtually any vital installation located along the coasts of the Americas. A detailed list of enemy capabilities indicated that Axis forces might successfully attempt any of the following operations:

- The capture or isolation of Alaska.
- Attacks on the West Coast by air, sea, or land.
- Seizure of bases in Canada or Mexico for later attacks on the United States.
- Capture of the Galapagos Islands.
- Air operations against the Panama Canal.
- Bombing of oil refineries in Peru or Venezuela.
- Seizure of airports and bridgeheads in Brazil.
- The fomenting of revolutions in Latin America.
- Attacks on the East Coast, perhaps after taking a lend-lease base.
- The capture or isolation of Greenland or Iceland.⁹

These first estimates undoubtedly reflect the shock resulting from the enemy's initial victories. As was proper, they sought to cover all conceivable eventualities. But they serve to emphasize the urgent demands of the moment, the necessity, while providing reinforcements for hard pressed outposts and carrying forward plans for attack of the enemy's vital establishments, to meet immediate and new requirements for an adequate defense of the Western Hemisphere.

Air Defense Activities in the Period of Alerts and Alarms

With the extremely limited resources available to the Army Air Forces in December 1941, it was impossible to provide even token defenses for all vital targets in the hemisphere. A host of advocates—both in and out of the Army—arose to press the claims of each of the “most vital” installations or areas, among these being the Panama and

the Sault Sainte Marie canals, aircraft plants along both coasts, oil refineries off the coast of Venezuela, bauxite mines in the Guianas, and cryolite deposits—needed in making aluminum—at Ivigtut, Greenland. Military commanders, impressed with the damaged reputations which had been caused by Pearl Harbor, demanded large reinforcements to assure the safety of the area each was charged with defending.¹⁰ Had the War Department listened to all these pleas, the existing air force would have been dispersed in small and ineffective units, and the AAF would have been required to surrender any early hope of building an offensive force. A system of priorities was essential, and, because the chief fear was of further carrier raids by Japan, initial air defense arrangements took the form of emergency reinforcements for Panama, Alaska, and the continental West Coast.¹¹

A great deal of attention had been given before the war to the defenses of the Panama Canal, and to a superficial observer this target might have appeared to be well defended in December 1941.* There were, to be sure, three pursuit groups and the equivalent of two bombardment groups on duty in or near the Canal Zone, and these units had in addition to obsolete equipment more than 100 reasonably modern airplanes.¹² The appearance, however, was misleading, and the following fundamental weaknesses demanded immediate remedial measures: of the airplanes assigned, only one squadron of B-17's was capable of operating at high altitudes; only two ineffectual radar stations were available; neither the Army nor the Navy had enough planes to provide adequate offshore patrols; and aircraft bases were so concentrated that a surprise raid on two fields, situated only five miles apart, might have destroyed two-thirds of the tactical planes assigned to defend the canal.¹³

Officials in Washington were aware of the danger to the canal and gave priority to furnishing nine additional heavy bombers.¹⁴ Pursuit reinforcements were provided from within the Caribbean Defense Command by transferring twenty-five P-40's from Puerto Rico to the Canal Zone, a movement completed on 14 December.¹⁵ At the end of December, eighty additional pursuit planes arrived in Panama from the United States.¹⁶ The critical need for aircraft warning instruments was eased by the arrival on 26 December of four mobile radar sets.¹⁷ Meantime, AAF officers in Panama had taken local measures to increase the readiness of their units. During December, planes were

* See above, pp. 160-66.

dispersed to fields outside the Canal Zone, additional revetments were hurriedly built, and camouflage was employed wherever possible.¹⁸ Air traffic regulations for the Canal Zone were revised to provide for a defended zone extending ten miles on either side of the canal.¹⁹

December 1941 was marked by invasion fears in Panama and throughout the Caribbean region. Hostile carriers were reported on 8 December along the Pacific approaches to the canal. Again on 10 December the Navy reported that radio transmissions indicated a concentration of enemy vessels to the west of the canal. The War Department relayed a report that a carrier had been sighted off the coast of Mexico.²⁰ On the 10th, convincing evidence was received to the effect that the Vichy regime had turned over the French fleet to the Germans.²¹ The next day one of the French vessels at Martinique was reported to have left the harbor, and plans were drafted for joint Navy and AAF action to meet what might be a new threat to the canal.²² Because of all these reports, a special alert was maintained for several days throughout the Caribbean, and, as the tension approached its height, an episode occurred which indicated the inexperience of American forces. The incident came to be known as "the battle of Borinquen," from the air base in Puerto Rico where it took place.²³ Shortly after dark on 12 December, a report reached Borinquen Field to the effect that a large enemy transport had dropped anchor in a bay near by. Landing barges full of troops were said to be coming ashore. A junior officer, without investigating the matter, alerted and blacked out the field. A bomber was dispatched to attack the ship but, through neglect, no bombsight was on board. Nevertheless, bombs were dropped and small boats in the bay were strafed. Meanwhile guards at the gates of the airfield saw tracer bullets, thought they detected soldiers approaching, and opened fire with machine guns, firing several thousand rounds. The next day it was discovered that the affair had been caused by an innocent American freighter which had been at sea without radio communication and had not heard of the start of war. The firing on shore was caused by the accidental discharge of the rifle of a sentry, which had led to an extended exchange of fire between adjacent guard posts; fortunately the aim was poor. The incident gave proof of the need for better control of both ground and air personnel and for more careful direction by experienced senior officers during periods of alert. It indicated that much remained to be done before the

Caribbean and Canal Zone could be said to be ready for any eventuality.

America's northwest outpost, Alaska, was also exposed to attack after 7 December 1941. The Navy was responsible for the general strategic defense of the region, but the Army was charged with local defense of bases.²⁴ Though, according to currently accepted plans, chief reliance for the latter function was placed on air power, at the start of hostilities only a token force was stationed in Alaska.* A measure of the inadequacy of that force was contained in a letter written by the commander of the Alaska Defense Command, Brig. Gen. Simon B. Buckner, Jr., on 8 December: "At dawn this morning I watched our entire Alaska Air Force take to the air so as not to be caught on the field. This force consisted of 6 obsolescent medium bombers and 12 obsolete pursuit planes."†²⁵ It was not just poverty in aircraft which made the Alaskan situation so perilous. There were few well-developed airfields, and none at all in the Aleutians.²⁶ Moreover, speedy construction of bases promised to require enormous effort because of the difficulties of terrain and weather. As one Alaskan expert described the problem, there were "no home grown landing areas . . . all have to be imported."²⁷ Such tactical airplanes as were available were of only limited use for want of an effective aircraft warning service.²⁸ The supply of winterized aircraft suitable for arctic flying conditions presented another problem,²⁹ and even aviation gasoline and antiaircraft ammunition were critically short. Alaskan military leaders were concerned about the safety of men and equipment because construction at the bases had been concentrated in small areas for reasons of "economy of sewer pipe."³⁰

None of these problems would have been so critical had Alaska not been cut off by weather and distance from speedy reinforcement. The lack of a highway or railway connection with the United States meant that supplies had to go by air or by the time-consuming and vulnerable sea route. Two air routes were available, one following the coast and the other going inland through Edmonton to Fairbanks, but both were hazardous and poorly developed. A survey made in October 1941 had revealed that the coastal route was undesirable because of its perpetual low-pressure areas, which created dense clouds and fogs. The inland route offered better weather, but north of Edmonton

* See above, pp. 166-70.

† But cf. above, p. 170.

human habitations were scarce, the terrain was wild and desolate, few radio aids existed, and maps were incomplete or misleading. Particularly poor conditions prevailed between Fort Nelson and Watson Lake, and in this area, as one pilot observed, "any haphazard guessing will lead to disaster."³¹ Bitter experience quickly demonstrated the costliness of sending untrained aircrews over this route. Essentially, then, for the first months of the war Alaska had no adequate air defense. Two days before the outbreak of hostilities, Col. Everett S. Davis, pioneer Air Corps leader in Alaska, had aptly characterized the force at his command as no more than "a cadre sent to the territory in advance of the main body."³² To carry out plans, fortunately already agreed upon, for moving up the main body presented a task of the highest priority, for spring would bring weather favorable to a major enemy attack.

Concern over the safety of the hemisphere was not limited to fears for its outposts. By an order of 11 December, the Western Defense Command became a theater of operations;³³ on 20 December, a similar order provided for an eastern theater along the Atlantic coast.³⁴ By these acts, defense received priority over all training activity in both coastal zones, which were now raised to a new category of defense (Category C) in recognition of the fact that minor attacks were not only possible but probable.³⁵ It will be noted that it was not anticipated that enemy forces could bring to bear any sustained attack on the continental area, but, as Pearl Harbor had so forcefully demonstrated, a single and well-directed blow could inflict serious injury.

That the chief focus of attention fell first on the Pacific rather than the Atlantic coast is explained by the former's peculiarly exposed position following the Pearl Harbor attack.* Concentration of some of the larger aircraft plants in that region appeared to offer especially tempting bait for a Japanese raid. Fortunately, news of the start of war did not come as a complete surprise to the military forces there. The warning message sent by the War Department to the Western Defense Command on 27 November 1941, indicating that negotiations with Japan in effect had terminated and that war was probable, had resulted in an acceleration of measures being taken to provide an aircraft warning service.³⁶ Defense arrangements were further facilitated by the

* On the Atlantic side, principal concern was with the prospect of submarine attack. AAF participation in the inauguration of emergency patrols is separately treated below in Chapter 15.

fact that air force and antiaircraft artillery units, and civilian volunteers working with the warning service, were at the outbreak of war taking positions in California for an exercise scheduled to begin on 11 December.³⁷

Once the news of the Japanese attack had been received on the mainland, the Fourth and Second Air Forces, which shared responsibility for defending the West Coast, readjusted their forces to provide maximum protection for the major cities.³⁸ In co-operation with the Navy, offshore patrols were promptly instituted to provide warning against carriers and to combat submarines. The aircraft warning service was put into operation, with civilians hurriedly manning their observation posts. Amateur radio stations were ordered off the air, and unnecessary civilian flying was prohibited. The War Department ordered the immediate movement of reinforcements for the Pacific coast by air and fast trains. The supply of heavy bombers was so limited that it was not found possible to immobilize any large number by assigning them to stations along the coasts. Locally based air units therefore consisted in large part of fighter aircraft, to which were added antiaircraft artillery, barrage balloons, and searchlights. The first reinforcement to reach the Pacific coast consisted of planes of the 1st Pursuit Group, which arrived at San Diego on 8 December; by 22 December this entire P-38 group had been transferred from Michigan to California. An additional augmentation of pursuit strength was provided in mid-December by the temporary assignment to the Fourth Air Force of a Marine unit, Air Wing 1. Meantime, antiaircraft artillery units had begun to reach the West Coast from inland stations, and some regiments which were at ports of embarkation were diverted to coastal defense assignments.³⁹

As these and other forces took up their defensive positions, coastal communities suffered from an "invasion fever" which first showed itself with the calling of an alert in San Francisco on 8 December. In the afternoon of the 8th, rumors of an enemy carrier off the coast led to the closing of schools in Oakland.⁴⁰ That evening, while residents of the Bay area were having dinner, radio broadcasting suddenly ceased, and this was followed by a blackout which lasted nearly three hours. In the absence of adequate preparations, sirens on police cars were used to warn the people, and self-appointed neighborhood wardens rushed from door to door to help enforce the blackout. Reports reaching Washington of an attack on San Francisco were

regarded as credible,⁴¹ but news dispatches soon characterized the affair as a test and announced that California had "caught its breath again." The Army, however, insisted that radar stations had tracked airplanes approaching the coast from a distance 100 miles at sea.⁴² The continuity of the tracking convinced officers that the planes were hostile, and Lt. Gen. John L. DeWitt of the Western Defense Command strongly denounced those who treated the alert lightly. In the *San Francisco News* of 10 December he was quoted as follows: "Last night there were planes over this community. They were enemy planes! I mean Japanese planes! And they were tracked out to sea. You think it was a hoax? It is damned nonsense for sensible people to assume that the Army and Navy would practice such a hoax on San Francisco."⁴³ Newspapers, impressed with these statements, carried banner headlines announcing that the "Army Warns City Danger Near."⁴⁴ A similar message had been carried to a national audience on 8 December when Fiorello La Guardia, head of the Office of Civilian Defense, told the radio public: "I do not want to unduly alarm my fellow citizens, but I want to be realistic. The situation is serious. We must not underestimate what happened twenty-four hours ago."⁴⁵

Disturbing rumors of enemy threats continued to mount on 9 December. Early that morning unidentified planes were reported off southern California, and the Eleventh Naval District ordered preparations made to repulse a raid by sea or air.⁴⁶ Later the Navy relayed to the AAF a "red hot tip" which announced that thirty-four enemy vessels were standing off the coast near Los Angeles, waiting for the fog to lift before starting an attack. Army planes were dispatched and found that the alarm had been occasioned by the presence of a group of American fishing boats.⁴⁷ Later in the day a report told with convincing detail of a "Japanese cruiser 20,000 yards off the west tip of Catalina Island." Other witnesses insisted that a cruiser and three destroyers, flying Japanese flags, had been spotted off the coast. This of course was the period when whales were mistaken for enemy submarines, and when floating logs were bombed by inexperienced and overeager aircrews.⁴⁸

Such rumors and alerts were not confined to the Pacific coast. On 9 December an air raid warning, the first of the war, swept New York City and the northeast states.⁴⁹ At noon, advices were received that hostile planes were only two hours' distance away. Fighter aircraft from Mitchel Field took the air to intercept the raiders, and radio

stations left the air. Since there was no system for warning the public—New York's air raid sirens were not installed until February 1942⁵⁰—the police took the initiative in spreading news of the alert. As a precautionary measure school children were hurriedly sent home. No general hysteria was noted, but the warning was taken for the real thing on Wall Street, where a wave of selling on the exchanges brought security quotations down hundreds of millions of dollars in the worst slump of the stock market since the collapse of France.⁵¹ The alarm spread to Boston, where police shifted heavy stores of guns and ammunition from storage vaults to stations throughout the city, and where industrial establishments were advised to prepare for a raid.⁵²

The many alerts of this period reflect the inexperience of both the public and the defense forces. To some critics they indicated a deliberate attempt by the Army to frighten the public in order to stimulate interest in war preparations. Before accepting this view, however, it should be noted that many of the reports of unidentified aircraft, leading to precautionary blackouts, resulted from mechanical difficulties with new radar equipment and from the understandable mistakes of inadequately trained personnel. Further, there is every evidence that Army commanders were genuinely convinced that the danger of attack, especially against the West Coast, was very real.⁵³ Military men knew better than the layman how limited were the defenses against air attack. Along the Pacific coast in December 1941 there were, for example, only forty-five thoroughly modern fighter planes⁵⁴ to defend a coast line which extended for 1,200 miles, and along which were located such important aircraft plants as those of Boeing in Seattle, Douglas and Lockheed in Los Angeles, and Consolidated in San Diego. In heavy bombers, the defenders were even less well equipped; for at the close of 1941, there were only ten such planes stationed along the entire coast and the number within reach for concentration against an enemy force was indeed limited. Although there were seventy-five medium bombers at hand, their short range cut down their usefulness against the type of attack expected. Moreover, during late 1941 crews of both fighters and bombers were handicapped by an acute shortage of ammunition.⁵⁵

To reconstruct the problem as it appeared to air officers at the time, let us assume that the report of the presence of thirty-four Japanese ships off the California coast on 9 December 1941 had proved to be

PLANES ON ALEUTIAN ISLANDS

JAPAN
SUDEN ON U.S. AND BRITAIN
HEAVY FIGHTING AT SEA REPORTED

3000-PLANE RAIDS DURING
STIMSON
OF MORE
BIG LOSSES

Britain Mobilizes Entire Nation
To Combat Fire Bomb Menace

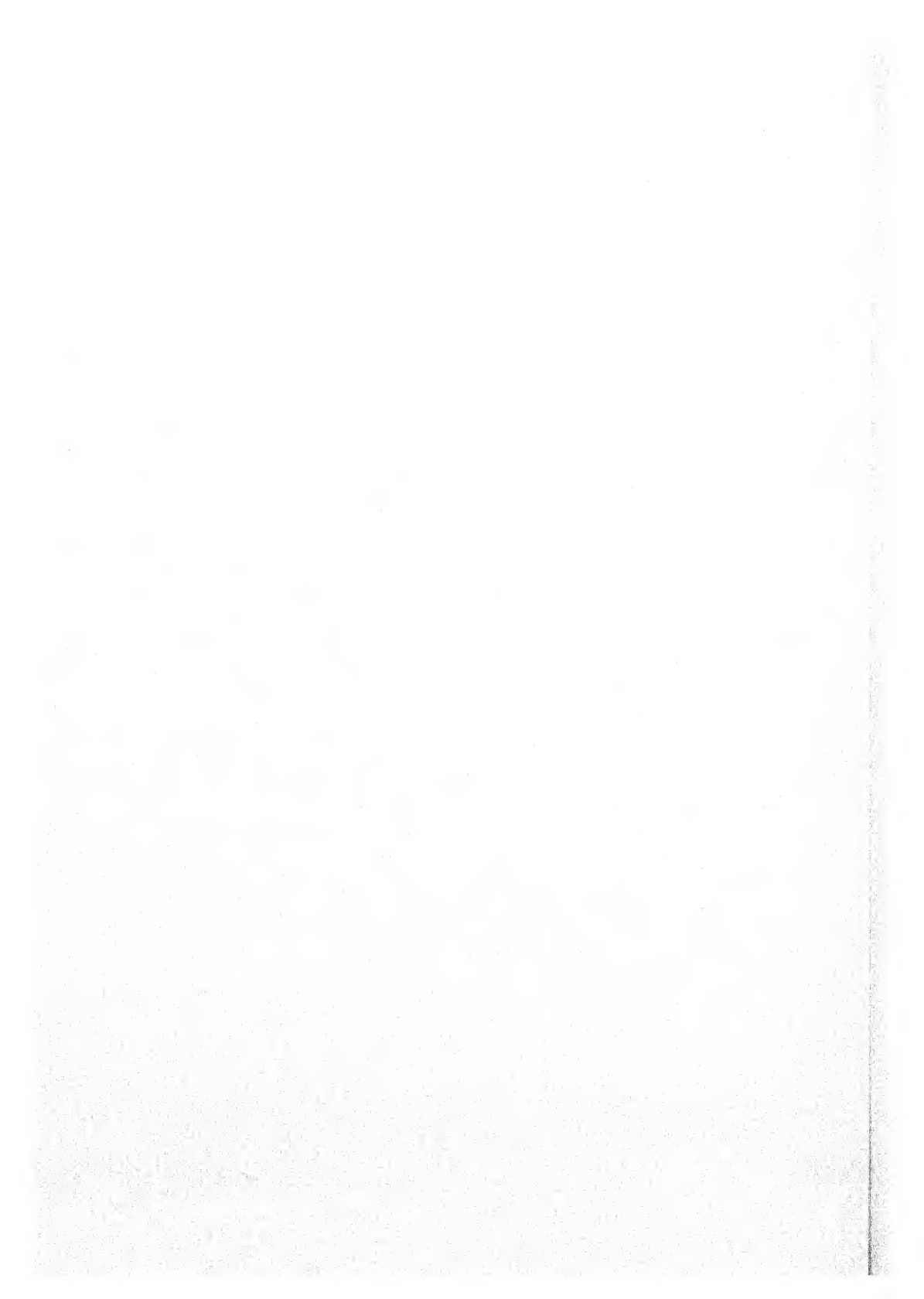
English Coast Battered
In Heaviest Night Raid

BOMBERS ATTACK
PHILIPPINE POINTS

London Believes
With 9,000 Bombers
Foe Can Strike
at Any Time

"10,000
BOMBERS
A NIGHT"
BOMBERS STRIKE

Don't let this
happen here!
Volunteer now in
the Auxiliary Aircraft
Warning Service



true. With what forces could so threatening a surface fleet have been opposed? There is good evidence on this point, for the Fourth Air Force actually issued an order to "attack and destroy" the enemy task force. By good fortune, fourteen bombers destined for the Southwest Pacific were in the vicinity; but it was found that the machine-gun turrets on the planes would not operate, that there was no adequate supply of oxygen for high-altitude operations, that only a few 300- and 600-lb. bombs were on hand, and that the bombers would have to enter an engagement without fighter support.⁵⁶ How effective this force—which was larger than any normally stationed along the coast—would have been against a major enemy fleet must be left to the imagination, but competent authorities were convinced that a vigorous attack would have overwhelmed American air units at any of the chief points of defense along the western seaboard.⁵⁷

In spite of this grave concern for the safety of the West Coast, the first attack on a land objective in the Americas actually was directed against Aruba, in the Caribbean. On this small Dutch-owned island, and on neighboring Curaçao, were located large refineries which processed oil from wells in Venezuela and currently accounted for one-third of the United Nations' supply of high-octane gasoline.⁵⁸ In May 1940 the British had furnished small garrisons for the islands,⁵⁹ but the increased danger after Pearl Harbor led the Anglo-American planners at the ARCADIA conference to decide that larger forces of U.S. troops were needed.⁶⁰ Two flights of light bombers from the Caribbean Air Force accordingly were sent to Aruba and Curaçao in mid-January 1942,⁶¹ but attempts to send ground forces encountered diplomatic difficulties. At the end of January, President Roosevelt advised the President of Venezuela that, in deference to the latter's objections, the United States would delay the dispatch of troops; but he indicated that the situation was so serious that steps would have to be taken to safeguard the vital refineries.⁶² Public announcement of the troop movement was made on 11 February.⁶³

Early in the morning of 16 February, aggressive enemy submarine action in the Caribbean area began with an attack on shipping off the harbor at San Nicholas, Aruba.* After destroying two tankers, a submarine surfaced and shelled buildings of the Standard Oil refinery and then moved upshore for further attacks on shipping. The damage to the refinery was only superficial, but a torpedo which landed on

* See also p. 536.

varied from "very slow" to over 200 miles per hour, were observed to parade across the skies.⁷⁹ These mysterious forces dropped no bombs and, despite the fact that 1,440 rounds of antiaircraft ammunition were directed against them, suffered no losses. There were reports, to be sure, that four enemy planes had been shot down, and one was supposed to have landed in flames at a Hollywood intersection.⁸⁰ Residents in a forty-mile arc along the coast watched from hills or rooftops as the play of guns and searchlights provided the first real drama of the war for citizens of the mainland. The dawn, which ended the shooting and the fantasy, also proved that the only damage which resulted to the city was such as had been caused by the excitement (there was at least one death from heart failure), by traffic accidents in the blacked-out streets, or by shell fragments from the artillery barrage.⁸¹

Attempts to arrive at an explanation of the incident quickly became as involved and mysterious as the "battle" itself. The Navy immediately insisted that there was no evidence of the presence of enemy planes, and Secretary Knox announced at a press conference on 25 February that the raid was just a false alarm.⁸² At the same conference he admitted that attacks were always possible and indicated that vital industries located along the coast ought to be moved inland. The Army had a hard time making up its mind on the cause of the alert. A report to Washington, made by the Western Defense Command shortly after the raid had ended, indicated that the credibility of reports of an attack had begun to be shaken before the blackout was lifted. This message predicted that developments would prove "that most previous reports had been greatly exaggerated."⁸³ The Fourth Air Force had indicated its belief that there were no planes over Los Angeles. But the Army did not publish these initial conclusions. Instead, it waited a day, until after a thorough examination of witnesses had been finished.⁸⁴ On the basis of these hearings, local commanders altered their verdict and indicated a belief that from one to five unidentified airplanes had been over Los Angeles.⁸⁵ Secretary Stimson announced this conclusion as the War Department version of the incident, and he advanced two theories to account for the mysterious craft: either they were commercial planes operated by an enemy from secret fields in California or Mexico, or they were light planes launched from Japanese submarines.⁸⁶ In either case, the enemy's purpose must have been to locate antiaircraft defenses in the area or to deliver a blow at civilian morale.

The divergence of views between the War and Navy departments, and the unsatisfying conjectures advanced by the Army to explain the affair, touched off a vigorous public discussion. The *Los Angeles Times*, in a first-page editorial on 26 February, announced that "the considerable public excitement and confusion" caused by the alert, as well as its "spectacular official accompaniments," demanded a careful explanation. Fears were expressed lest a few phony raids undermine the confidence of civilian volunteers in the aircraft warning service. In Congress, Representative Leland Ford wanted to know whether the incident was "a practice raid, or a raid to throw a scare into 2,000,000 people, or a mistaken identity raid, or a raid to take away Southern California's war industries."⁸⁷ Wendell Willkie, speaking in Los Angeles on 26 February, assured Californians on the basis of his experiences in England that when a real air raid began "you won't have to argue about it—you'll just know."⁸⁸ He conceded that military authorities had been correct in calling a precautionary alert but deplored the lack of agreement between the Army and Navy. A strong editorial in the *Washington Post* on 27 February called the handling of the Los Angeles episode a "recipe for jitters," and censured the military authorities for what it called "stubborn silence" in the face of widespread uncertainty. The editorial suggested that the Army's theory that commercial planes might have caused the alert "explains everything except where the planes came from, whither they were going, and why no American planes were sent in pursuit of them."⁸⁹ The *New York Times* on 28 February expressed a belief that the more the incident was studied, the more incredible it became: "If the batteries were firing on nothing at all, as Secretary Knox implies, it is a sign of expensive incompetence and jitters. If the batteries were firing on real planes, some of them as low as 9,000 feet, as Secretary Stimson declares, why were they completely ineffective? Why did no American planes go up to engage them, or even to identify them? . . . What would have happened if this had been a real air raid?"⁹⁰ These questions were appropriate, but for the War Department to have answered them in full frankness would have involved an even more complete revelation of the weakness of our air defenses.

At the end of the war, the Japanese stated that they did not send planes over the area at the time of this alert,⁹¹ although submarine-launched aircraft were subsequently used over Seattle.⁹² A careful study of the evidence suggests that meteorological balloons—known

to have been released over Los Angeles⁹³—may well have caused the initial alarm. This theory is supported by the fact that antiaircraft artillery units were officially criticized for having wasted ammunition on targets which moved too slowly to have been airplanes.⁹⁴ After the firing started, careful observation was difficult because of drifting smoke from shell bursts. The acting commander of the antiaircraft artillery brigade in the area testified that he had first been convinced that he had seen fifteen planes in the air, but had quickly decided that he was seeing smoke.⁹⁵ Competent correspondents like Ernie Pyle and Bill Henry witnessed the shooting and wrote that they were never able to make out an airplane.⁹⁶ It is hard to see, in any event, what enemy purpose would have been served by an attack in which no bombs were dropped, unless perhaps, as Mr. Stimson suggested, the purpose had been reconnaissance.

The Air Defense System in Early 1942

No one was more acutely aware of the weakness of our air defenses than was the Army, and energetic steps were being taken to improve them. The sudden opening of hostilities in December 1941 had forced the United States to put into immediate operation an air defense system which was still in a formative stage. Little more than eight months had passed since the Air Corps had received over-all responsibility, and, though substantial progress had been made, no satisfactory system of defense could be improvised in so short a period of time. In assessing responsibility for the initial difficulties, it is fair to note that even such progress as had been made had resulted from the zealous efforts of a small group within the Army who worked in the face of public indifference. A general lack of understanding of the necessity for this effort is indicated by the fact that as late as October 1941 citizens had been inclined to smile indulgently at Army attempts to organize volunteers for service with the Aircraft Warning Service.⁹⁷ And even within the Army there was a serious lack of understanding of the utility of the newer devices of air defense, a fact which was indicated on 7 December 1941 by failure of Hawaii-based personnel to make proper use of the radar report which warned of the approaching Japanese planes.

In World War I, the rapid development of the airplane as an offensive military weapon had led some theorists to prophesy that no adequate defense against air attack could be devised.⁹⁸ Experts, however,

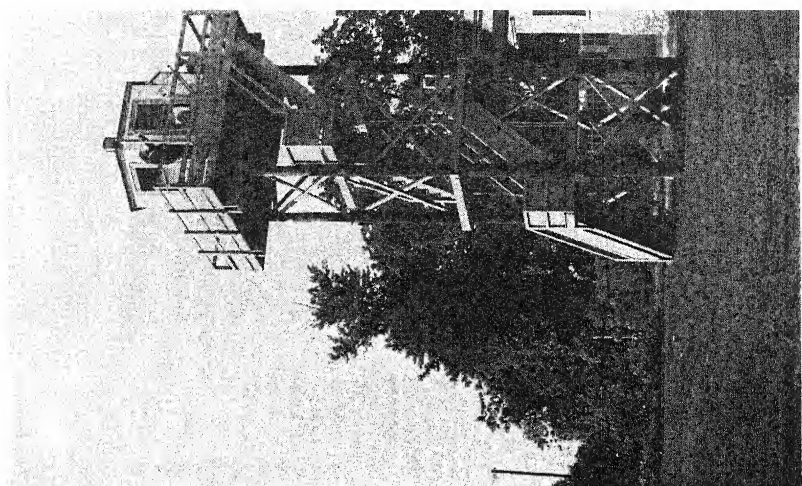
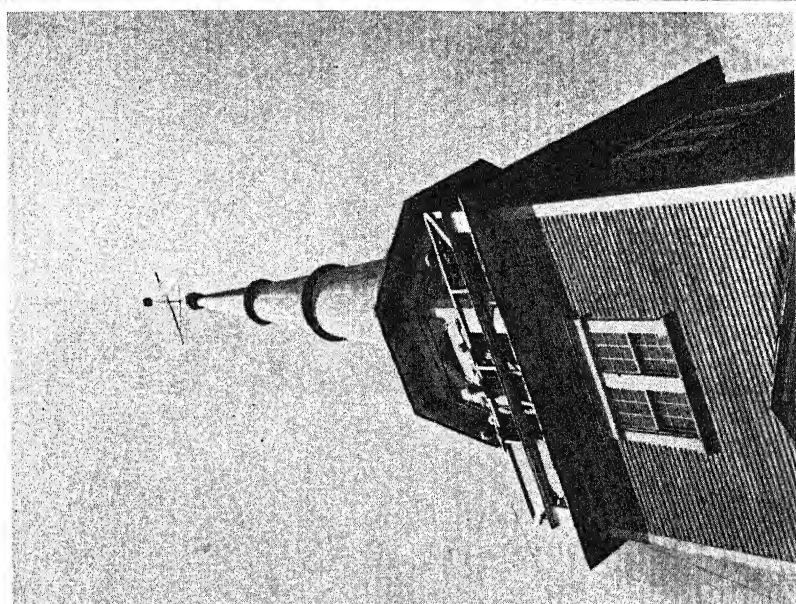
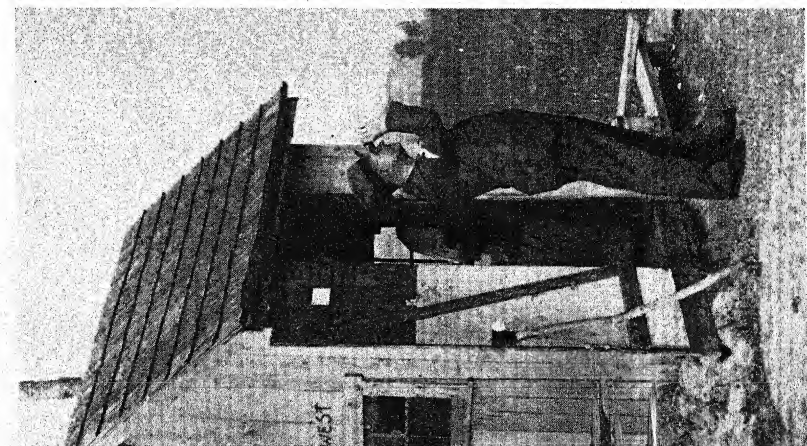
soon defined the elements which would be required in a defense system. It would be necessary to know in advance of the approach of enemy craft. Next, there would have to be some method for continuous tracking of the planes as they came toward their objective, and this would require some device to supply information regarding the height, direction, speed, and approximate size of a raiding force. Finally, there would need to be some system for identifying friendly fighters and of communicating to their pilots the information gathered on the movement of enemy planes. Given all these elements, a commander on the ground might then *control* the interception and bring friendly fighters into contact with any large attacking force. Such a system might not prevent an occasional raider from breaking through, but it would make it possible to limit the advantage of complete surprise which some students of the problem thought the airplane would always enjoy.

With the technical equipment which existed in 1918, no adequate defense against air raids was possible, but attempts to perfect new devices occupied much of the time of military planners through the two decades between World Wars I and II.⁹⁹ The first detectors used such equipment as parabolic reflectors to pick up the sound of an oncoming plane, but results were so poor that the United States Army in 1933 abandoned research in the field of auditory detection.¹⁰⁰ Several other lines of investigation, notably in the possibility of using infrared heat waves, attracted attention, but ultimately interest came to be centered in discovery of a more exact method of detection by use of radio waves. At first, ordinary radio waves were employed; but severe technical limitations were encountered, and the true origins of modern military radar—"radio detection and ranging"—dated from 1935, when practical microwave radio sets were developed. Four basic steps were involved in the improvements which gave radar its great military significance: ¹⁰¹ the discovery that radio energy of very high frequency was reflected by objects in its path rather than being absorbed as was the case with waves of lower frequency; the development of a transmitter to emit pulses of radio energy in a sharply defined directional beam, which, with allowance of a time lapse between emissions, permitted a receiver to pick up the energy reflected from the target; the perfection of a cathode ray tube, or oscilloscope, on which the small time lapse between the outgoing pulse and the reflected image could be measured; and, finally, the invention of the cavity magnetron tube,

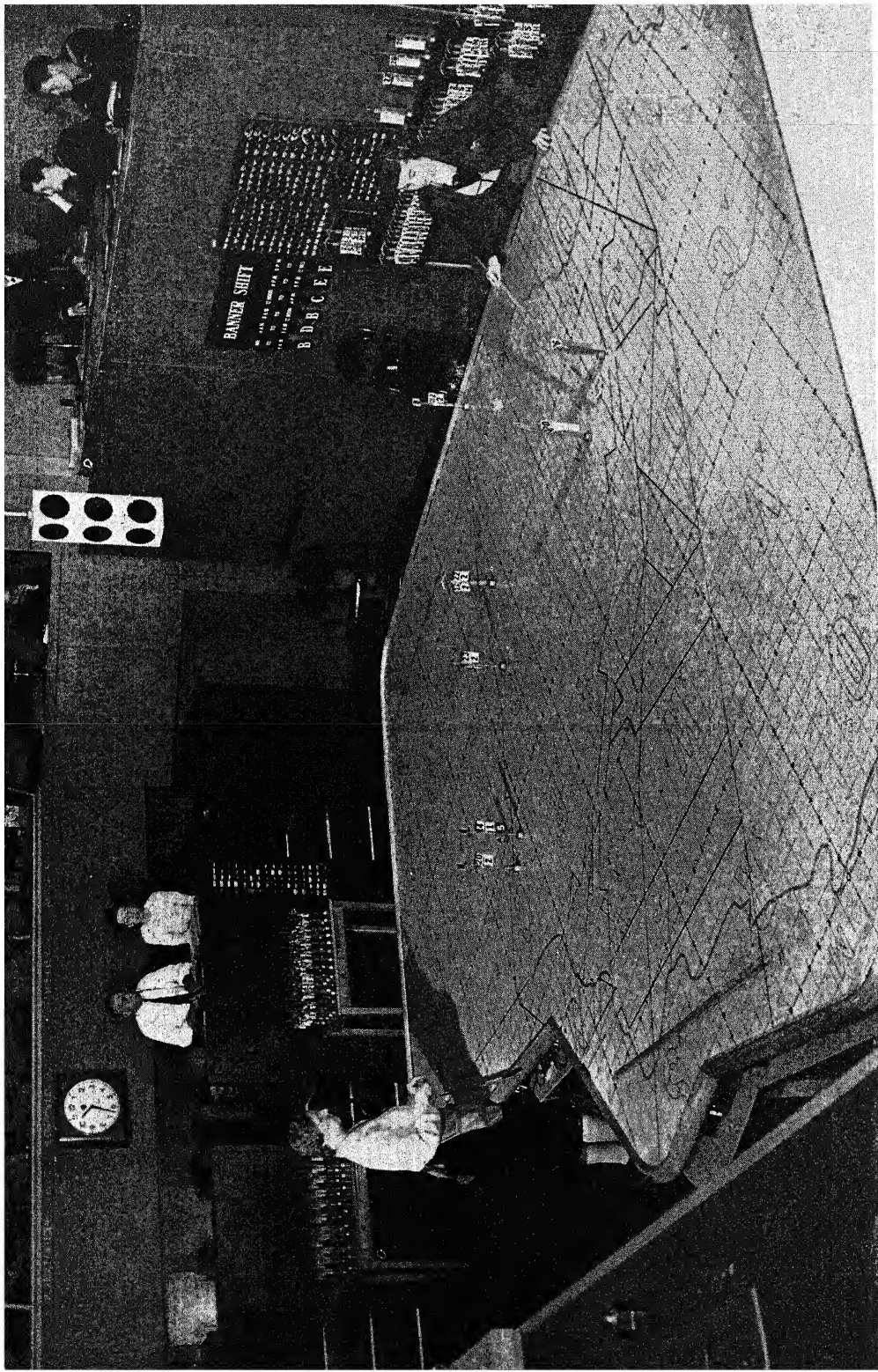
which could generate considerable power at very short wave lengths. No one nation enjoyed a monopoly of these discoveries, but the most rapid progress in devising practical military applications was registered by the British.

The basic problem of providing early warning to defending aircraft had been solved in Britain by 1939. A chain of radar stations along the coast provided reasonably effective information on planes approaching from the continent.¹⁰² Thus, when the Germans began large-scale daylight raids against England in August 1940, the RAF was able to conserve its limited fighter strength by keeping the planes on the ground until an attack actually impended and thus to achieve a more efficient concentration of force.¹⁰³ When the Germans switched to indiscriminate night attacks, British defenses for a time proved less effective,¹⁰⁴ for advance warning of the enemy's approach did little good unless he could be found in the dark. Fortunately, the RAF, magnificently served by such advisers as Robert Watson-Watt, rapidly went beyond the original conception of radar as merely a device for early warning. Under the compulsion of war and the special lash of the night blitz, the British perfected and put into use a whole new series of electronic devices which guided every step in the process of intercepting enemy planes.

The original radar equipment installed along the coasts of Britain had been well suited to handling daytime raids, for it had a long range—up to 200 miles. But these sets did not permit the fine discrimination between targets which was needed to guide night fighters to the immediate vicinity of enemy bombers.¹⁰⁵ A new type of radar known as GCI (ground controlled interception) transformed the British system from one of crude warning into a machine for dependable control of interception. GCI equipment made it feasible to plot, virtually instantaneously, the positions of a large number of planes. Moreover, it displayed the information on an ingenious PPI (plan position indicator) scope, which was a cathode ray tube on the face of which a map of the region had been drawn. Aircraft within range of the GCI set were shown on the map as spots of light.¹⁰⁶ The British also developed equipment known as IFF (identification friend or foe) which indicated to a ground observer which of the targets in the PPI scope were friendly. The identification was accomplished by installing in friendly planes an electronic device—a simple short-wave radio transmitter—which sent coded signals when interrogated by a ground station.¹⁰⁷



GROUND OBSERVATION POSTS



OPERATIONS ROOM, PHILADELPHIA INFORMATION CENTER

Controllers were thus able to issue instructions to their pilots and to guide them into contact with hostile planes. The ground-to-air instructions were sent by means of a new type of VHF (very high frequency) radio equipment, which was greatly superior to the high frequency radios then in use in the U.S. Army.¹⁰⁸ The VHF command set permitted controllers to maneuver friendly fighters to a point about one or two miles from an enemy plane and to guide them back to their base at the end of the fight. But to achieve interceptions at night, it was necessary for a pilot to get his plane "on the very tail" of his target. The British solved this problem by the development of a new radar called AI (airborne interception). By switching on this equipment, a radar operator in a British plane could guide his pilot to a point a few hundred yards from a Nazi raider.¹⁰⁹ One collateral development of the British deserves mention because of its great significance for the United States. This was ASV radar (air to surface vessel) airborne equipment which enabled a patrol plane to detect ships at distances up to fifty miles.¹¹⁰ Offshore patrols using ASV radar greatly enlarged the early warning coverage of coastal radars, and in addition this equipment became a weapon of vital importance in the war against Axis submarines.

Through prewar years the United States had not kept pace with Britain in radar developments. The Air Corps and the Coast Artillery had supported the efforts of the Signal Corps to perfect early warning devices, but the Army lacked both the funds and the manpower to undertake a large-scale development of radar equipment.¹¹¹ By the fall of 1939, the American Army had only an experimental installation at Fort Monmouth, New Jersey.¹¹² In November of that year, General Arnold directed the War Department's attention to the lack of a national air defense system, and strongly urged that a unit be established to study the problem.¹¹³ The result was the creation on 26 February 1940 of the Air Defense Command for the conduct of experiments in the northeastern states to determine how fighter planes, anti-aircraft artillery, and an air warning system could be integrated into a single defense network.*¹¹⁴ In its efforts, the command enjoyed through the co-operation of the RAF unusual opportunities to compare results with those attained in actual combat. Moreover, Anglo-American co-operation now extended to mutual exchange of technical equipment.¹¹⁵ The United States began to receive information on air-

* See above, pp. 152-53.

borne interception equipment before the end of 1940 and was given prototypes of the British VHF radio set early in 1941. Similarly, the IFF device developed in England was copied by the Signal Corps and was adopted in August 1941 as standard American equipment.¹¹⁶

Equally important were the ideas the British supplied on the proper organization of an air defense net. The assignment of full responsibility for air defense to the Air Corps in the spring of 1941 was prompted in no small part by the demonstrated advantage in Britain's well-integrated system.¹¹⁷ Under the newly established defense commands, four regional interceptor commands, as components of the four continental air forces, were charged in their several areas with control for purposes of air defense of air warning equipment, fighter planes, anti-aircraft artillery, and barrage balloons.* These so-called active agents of defense were to be supplemented by such passive measures as provision for civilian air raid warning and blackouts, which were made the responsibility of organizations working under the supervision of the Office of Civilian Defense.¹¹⁸

The warning network planned in the spring of 1941 for the United States represented a compromise with the ideal. A perfect arrangement would have depended primarily upon a series of radar stations sufficient in number to assure mechanical detection of any hostile force. But there were not enough radar sets or technicians qualified to man them for coverage of the entire area of the country; and radar had not reached a stage of development which permitted it to operate over land with the same effectiveness it showed over the ocean. No radar equipment in existence in 1941 outside the laboratories could locate low-flying airplanes without detecting as "permanent echoes" the images of prominent landmarks.¹¹⁹ Accordingly, the War Department planned to recruit civilians to serve as ground observers for report on the identity and movements of aircraft over land and to use radar to provide a seaward extension of the warning network.¹²⁰

In the six months which immediately preceded Pearl Harbor, the four interceptor commands worked feverishly to create a coastal radar net and a supporting ground observer corps as components of the Aircraft Warning Service. When war came, sites had been picked for thirteen radar stations along the East Coast, and eight of the stations were approaching completion.¹²¹ On the West Coast, there were ten radars to guard the 1,200 miles from Seattle to San Diego.¹²² This

* See above, pp. 153-54.

radar coverage was supplemented on the East Coast by approximately 4,000 ground observer stations and along the Pacific by an additional 2,400.¹²³ Reports from ground observers had to be processed through filter and information centers, both of which required the services of large numbers of volunteer workers. The interceptor commands had managed to expedite the construction of the basic elements of this complex system, but there had not been time to recruit and train all the personnel required to operate it. Moreover, the network, even when placed in perfect readiness, could have met only the primary need of early warning. To permit effective control of fighter planes at night or during bad weather would have required the addition of mobile units equipped with the newer radar aids developed in Britain.¹²⁴ But in December 1941 the United States had no radar equipment comparable to the GCI set of Britain, and fighter planes in this country were still using high frequency—rather than VHF—radio sets. Airborne radar for night fighters was lacking, as was the identification equipment required to distinguish friendly from hostile planes.¹²⁵ Not a single airplane stationed on the Pacific coast was equipped with ASV radar,¹²⁶ with the result that crews of patrol bombers were entirely dependent on visual detection and could operate only during daylight hours and when visibility was good.

In providing a remedy for the recognized deficiencies of the American warning service, the War Department once again was able to draw on the experience of Britain. Immediately after Pearl Harbor, at the suggestion of the United States military mission in London, the RAF offered the services of Robert Watson-Watt, Scientific Advisor on Telecommunications to the Air Ministry.¹²⁷ His presence in the United States might serve, the British agreed, to "increase the scope and operational efficiency" of American radar and would be in line with Anglo-American efforts to "make the best common use of technical personnel and materiel."¹²⁸ Accordingly, Watson-Watt arrived in the United States before the end of December 1941 for the purpose of undertaking a detailed analysis of the peculiar problems of American air defense.

Any vestiges of complacency as to the adequacy of the American aircraft warning service which may have remained in War Department circles were destroyed by the severely critical report made by Watson-Watt in January 1942 of the air defenses on the West Coast. Dangerously unsatisfactory conditions existed, reflecting "insufficient

organization applied to technically inadequate equipment used in exceptionally difficult conditions.”¹²⁹ Progress would depend upon giving all levels of command an understanding of the true capabilities of radar, which, according to the British expert, could be found as a happy medium between two absurd attitudes, one of which viewed radar as an all-seeing, omniscient weapon, “a crystal ball on a truck,” and the other extreme which regarded it as nothing more than a freak gadget “producing snap observations on targets which may or may not be aircraft.” Actually, radar, in the hands of trained technicians, could provide a dependable warning system “in which continuity of tracking is normal, [and] where the unexplained is rare.” But such results could be achieved only with close organization and supervision, a point at which the American warning service fell short.

Equally serious was the problem of equipment. In a report filled with illuminating detail, the British expert found our seaward reconnaissance grossly inefficient because of the total lack of ASV equipment and because of the limited number of patrol aircraft of suitable range. The radar screen along the West Coast was based on too few stations, and the equipment itself had inherent defects which made it “gravely unsuitable.” All radar experts were agreed that each set represented a compromise between a variety of demands, but the principal American radar was “unique in combining slow search with poor cover in elevation, with lack of all facilities for height finding, and with a grave danger of plotting false tracks.” Moreover, dependable employment of this radar had been made even more unlikely because of a mistake in the selection of sites for its installation. Personnel to operate the radars had not been carefully selected and were inadequate both in numbers and in training. The United States was found to have repeated an early error of Britain in failing to provide for the training of large numbers of skilled radar technicians.

Officials in Washington accepted the report in the constructive spirit in which it was offered. The director of Air Defense at AAF Headquarters concurred in every detail with the findings and called the study “a damning indictment of our whole warning service.”¹³⁰ He also expressed the view that the situation on the East Coast was even worse than the conditions reported along the Pacific.¹³¹ The Chief Signal Officer and the Chief of the Army Air Forces agreed that the causes of the trouble lay in the lack of time for improvement of radar equipment and the limitations imposed by considerations of

security.¹³² But these officers also pointed out that the War Department and its subordinate units were not organized in such a way as to promote a maximum integration of effort in the field of radar.

Independent analyses by American officials bore out the general verdict rendered by Watson-Watt. Early in February 1942, an Army Air Forces report described the defenses of both the Eastern and Western Defense Commands as "entirely inadequate."¹³³ A special report of mid-February on East Coast defenses indicated that air warning units lacked proper equipment and were manned by poorly trained personnel and that "the only night defense which can be provided by the Interceptor Command consists of single seater aircraft operated by inexperienced personnel in cooperation with antiaircraft searchlights."¹³⁴ Many important objectives were totally unprotected by pursuit planes, and even the defense of New York City depended on seventeen fighters, eleven of which were obsolete. As late as 15 April 1942, Maj. Gen. Dwight D. Eisenhower wrote to General Arnold of the War Department's concern over the ineffectiveness of coastal air defenses and cited as disturbing evidence a report which indicated that one-third of all flights in the Eastern Defense Command were recorded as "unidentified."¹³⁵

Strengthening Continental Air Defenses

The hard fact was that many of the measures required for an operationally dependable system could not be improvised. It was not until late 1943, in fact, that the continental defense forces were generally equipped with VHF radio and a workable system for controlling interceptions at night.¹³⁶ But steps taken early in 1942 laid the basis both for a strong continental air defense and—what proved even more significant—for an efficient system for controlling fighters in offensive combat operations. Especially important was the extensive research program undertaken in such centers as the Radiation Laboratory at the Massachusetts Institute of Technology, an effort that served ultimately to raise American radar techniques to engineering and tactical levels unequalled by any other nation. Particularly significant was the development of microwave early warning (MEW) radar.¹³⁷ The relative inefficiency of radar in use along the Pacific coast in early 1942 attracted the attention of a University of California physicist, Dr. Luis Alvarez, who became convinced that a giant radar which could scan hundreds of miles and which could give

sharper definition of individual targets was possible. His enthusiasm, and the sustained research efforts of a large number of scientists at the Radiation Laboratory, led to the production within six months of a practical working model. By 1944, perfected MEW radar was ready to assist in the invasion of Europe, and the offensive employment of this new instrument revolutionized conceptions of what radar could do.¹³⁸ A weapon inspired by the problem of defending the West Coast thus proved to be a valuable contribution to victory in other theaters.

Helpful, also, to an immediate improvement of continental air defenses were organizational changes which served to clarify responsibilities. The Western Defense Command had been designated a theater of operations on 11 December 1941, with General DeWitt in command. With its headquarters at San Francisco, the command included an extensive area of nine western states, Alaska, and the Aleutians, and to it three air forces were initially assigned—the Fourth and Second Air Forces along the Pacific coast and, in addition, the Alaskan Air Force. A similar situation existed on the other side of the continent, where on 20 December the Eastern Theater of Operations was established with headquarters in New York City and with Lt. Gen. Hugh Drum in command of defense units in the eastern seaboard states and in Newfoundland and Bermuda. Two air forces, the First and the Third, were assigned to this theater.¹³⁹ Thus all four of the domestic air forces, which had been created early in 1941 and had been operating under the Air Force Combat Command, were removed from AAF control and placed under theater commanders. It is not surprising that this arrangement pleased no one: the defense commands found it confusing to have more than one subordinate air force commander, while the AAF felt that its combat training program would be jeopardized if it had no direct control of any of the continental air forces. A compromise was accordingly worked out and announced on 30 December 1941.¹⁴⁰ The essential element of the new plan was a provision which called for moving two of the continental air forces to inland stations and assigning them to the AAF as “training Air Forces.” To effect this arrangement, the Second Air Force relinquished its coastal stations in Washington and Oregon and was removed from assignment to the Western Defense Command; air defense duties for the entire Pacific coast were thereupon assigned to the Fourth Air Force. A similar move within the Eastern Defense Command made the Third Air Force a training unit under the AAF, while

the First Air Force took over responsibility for defense operations along the entire extent of the Atlantic coast. This arrangement lasted until the fall of 1943, when the danger of air attack had greatly decreased and the First and Fourth Air Forces were reassigned to the AAF.¹⁴¹ Much earlier—in March 1942—the Eastern Defense Command had ceased to be a theater of operations.¹⁴²

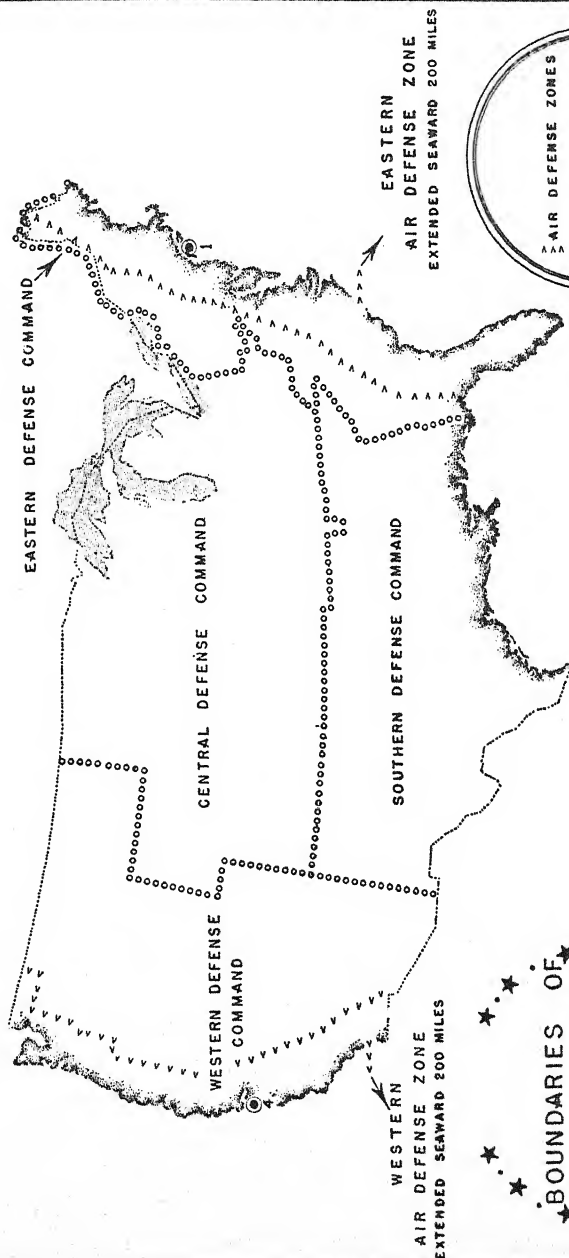
Although the actual direction of air defense operations was thus assigned to the theater commands, the AAF retained vital responsibilities for training and experimental development. In the reorganization of the War Department in March 1942, the reconstituted AAF staff included a director of Air Defense.¹⁴³ To this post was assigned Col. Gordon P. Saville, whose energy and vision had been in large part responsible for the rapid progress made in 1941 toward the creation of an aircraft warning service. His experience in the experimental work of the Air Defense Command and firsthand observation of the operation of British defenses had convinced him that progress in the development of an American defense depended on indoctrination of key personnel in the latest techniques of controlled interception. Accordingly, he secured the establishment (March 1942) of the Air Defense Operational Training Unit, later renamed the Fighter Command School. This unit set up in Florida an ideal air defense net based on the British system, using VHF radio and modern radar equipment.¹⁴⁴ The RAF sent skilled officers and technicians to act in an advisory capacity, but care was taken to adjust tactical procedures to American usages. In addition to indoctrinating command and staff members in the latest defense methods, the school trained radar units and tested equipment. Its responsibilities included study of the tactical and materiel requirements of overseas commands as well as the demands of continental defense. At the expense of existing task forces, the few specialists available were held for training of the large number of technicians that would be required for later operations.¹⁴⁵

The organizational adjustments directed on 30 December 1941 had been accomplished by the end of February 1942, and thereafter the pattern of continental air defenses became increasingly clear. Along the Pacific coast from Canada to Mexico a "vital air defense zone" of approximately 150 miles depth and extending 200 miles seaward was created by the Western Defense Command, and a similar zone along the Atlantic coast was established by the Eastern Defense Command.¹⁴⁶ Air operations within the western zone were directed by the Fourth

Air Force through its subordinate interceptor and bomber commands. The air force provided planes to defend vital targets and to conduct offshore patrols, supplied an aircraft warning service to alert both military and civilian agencies, and through regional commanders integrated all elements of the air defense. In accordance with the requirements of this last function, units of the 4th Antiaircraft Command—an Army Ground Forces unit—were placed under operational control of the IV Interceptor Command. On the East Coast a similar pattern established the First Air Force as the air arm of the Eastern Defense Command. But much of the attention of the I Bomber Command was directed to antisubmarine operations, and, in order to assure closer co-operation with the Navy, control of the bomber units was transferred on 26 March 1942 to the Eastern Sea Frontier.*

It was accordingly within the Eastern and Western Defense Commands that the specific measures required to correct the deficiencies noted in the Watson-Watt report were undertaken. At no time prior to the Battle of Midway in June 1942 were the air defenses of either coast really adequate to repel a major attack, but significant progress was made in improving the aircraft warning nets and in perfecting plans by which the small forces of aircraft assigned to coastal defense duties could be quickly reinforced from inland stations. The record within the Western Defense Command will illustrate the achievements of the first half of 1942. The radar net, which had consisted of ten stations on 7 December 1941, was expanded by the addition of fifteen new ones.¹⁴⁷ Many of the original sites having proved unsuitable, extensive resiting work was carried out. The process was difficult, costly, and time-consuming. Rugged terrain often made the work difficult even for experts—and there were few men of experience available. Good radar sites often were relatively inaccessible, far removed from roads, communications, power, and water; it was frequently necessary to build pioneer trails or roads for considerable distances before preliminary tests of radar equipment could be made, and the effort might be wasted then by the discovery of unpredictable operational difficulties. When the Western Defense Command desired an expansion of radar coverage to protect California's southern flank, delicate diplomacy was required to assure Mexico that no infringement of her national sovereignty was contemplated.¹⁴⁸ Late in May 1942 the negotiations resulted in an agreement by which three radar sets

* See below, Chap. 15.



AIR DEFENSE ZONES
DEFENSE COMMANDS
HQ FIRST AIR FORCE
HQ FOURTH AIR FORCE

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were transferred to Mexico for installation at sites in Lower California. Meantime, at the other extremity of the Pacific coast defense zone, arrangements had been completed with the Canadians to provide advance warning of aircraft approaching the vital Seattle-Bremerton region from across the international border. This result was achieved by having reports from radar installations in British Columbia relayed to the Seattle information center.¹⁴⁹ Relations with Canada on defense measures were intimate, and joint planning was carried to the point of providing for a united command of American-Canadian forces in the event of a major attack. The Permanent Joint Board on Defense, created in August 1940, provided machinery for the co-operation of Canadian-United States forces,* and a practical arrangement adopted early in 1942 permitted decentralization to regional commanders of the power to conclude agreements required for the common defense.¹⁵⁰

In addition to perfecting the radar network, the Western Defense Command devoted itself to increasing the efficiency of the civilian personnel of ground observer corps. The organization of the home front for air defense represented a unique problem in modern American military experience. Although President Wilson had spoken of a total war effort in World War I ("it is not an army we must shape and train for war; it is a nation" ¹⁵¹), it was in World War II, for the first time, that the home front shared actively in preparations for its own defense. Many critics—among them Watson-Watt ¹⁵²—doubted that a system dependent on volunteer effort could produce reliable information of the type required in a modern warning system. Serious problems in the large-scale use of civilians were encountered,¹⁵³ but the remarkable fact is that more than 6,000 observer posts in the United States were regularly, and with increasing efficiency, manned by volunteers whose efforts—especially at rural stations—represented real sacrifice.

Interest in the air defenses of the West Coast reached a climax in the alerts which preceded and accompanied the Battle of Midway. The Doolittle raid against Japan on 18 April 1942 convinced American authorities that the Japanese would be satisfied, in retaliation, only by a blow against the U.S. mainland. In a speech at Chicago on 19 April, James M. Landis, director of the Office of Civilian Defense, began the campaign to prepare the country for a revenge bombing.¹⁵⁴ The War Department even feared that the Japanese might try to use poison gas

* See above, p. 121.

against civilian populations and rushed all available training gas masks—more than 600,000 in number—to the Western Defense Command for issue to police, air raid wardens, and other key civilians.¹⁵⁵ These measures were accompanied by a newspaper campaign designed to prevent “undue excitement” in the event of a raid.¹⁵⁶ A general fear of reprisal was translated into sharp calls for action when intelligence was received in mid-May of the impending moves of the Japanese against Midway and the Aleutians.* Steps were taken at once to strengthen the defense forces along the western seaboard. General Marshall personally visited the Pacific coast and ordered additional antiaircraft artillery and barrage balloon units to the west.¹⁵⁷ An air task force from the Second Air Force was moved to coastal stations in support of the Fourth Air Force.¹⁵⁸ The danger seemed so acute by 1 June that the pending movement of the air echelon of the Eighth Air Force was suspended,¹⁵⁹ and on the following day the 97th Bombardment Group (H) left the concentration area in New England to fly in two elements to McChord Field in Washington and to Hammer Field in California. Similarly, the 1st Pursuit Group on 5 June flew from Maine to Morris Field in North Carolina under orders to proceed to the West Coast. But the Japanese fleet already had been defeated west of Midway, and on the 6th the pursuit group returned to Dow Field.†

Reappraisal of Panama Canal Air Defenses

The critical examination of air defenses which had followed the Pearl Harbor attack naturally included a re-examination of the defense of the Panama Canal. Plans made in 1940-41 for protection of the canal had anticipated that the chief danger would come from the eastern approaches, but now the emphasis shifted.¹⁶⁰ Recently acquired Caribbean bases and operational rights and facilities provided by an understanding with Brazil came to be of primary importance as steppingstones on the ferrying route to Africa or for use in the maintenance of antisubmarine patrols. The real danger to the canal was from the Pacific side, where virtually nothing had been provided by way of outlying defense and where, geographically, the canal was most exposed to surprise attack.

Early in March 1942, both Secretary of War Stimson and Watson-

* See below, Chap. 12.

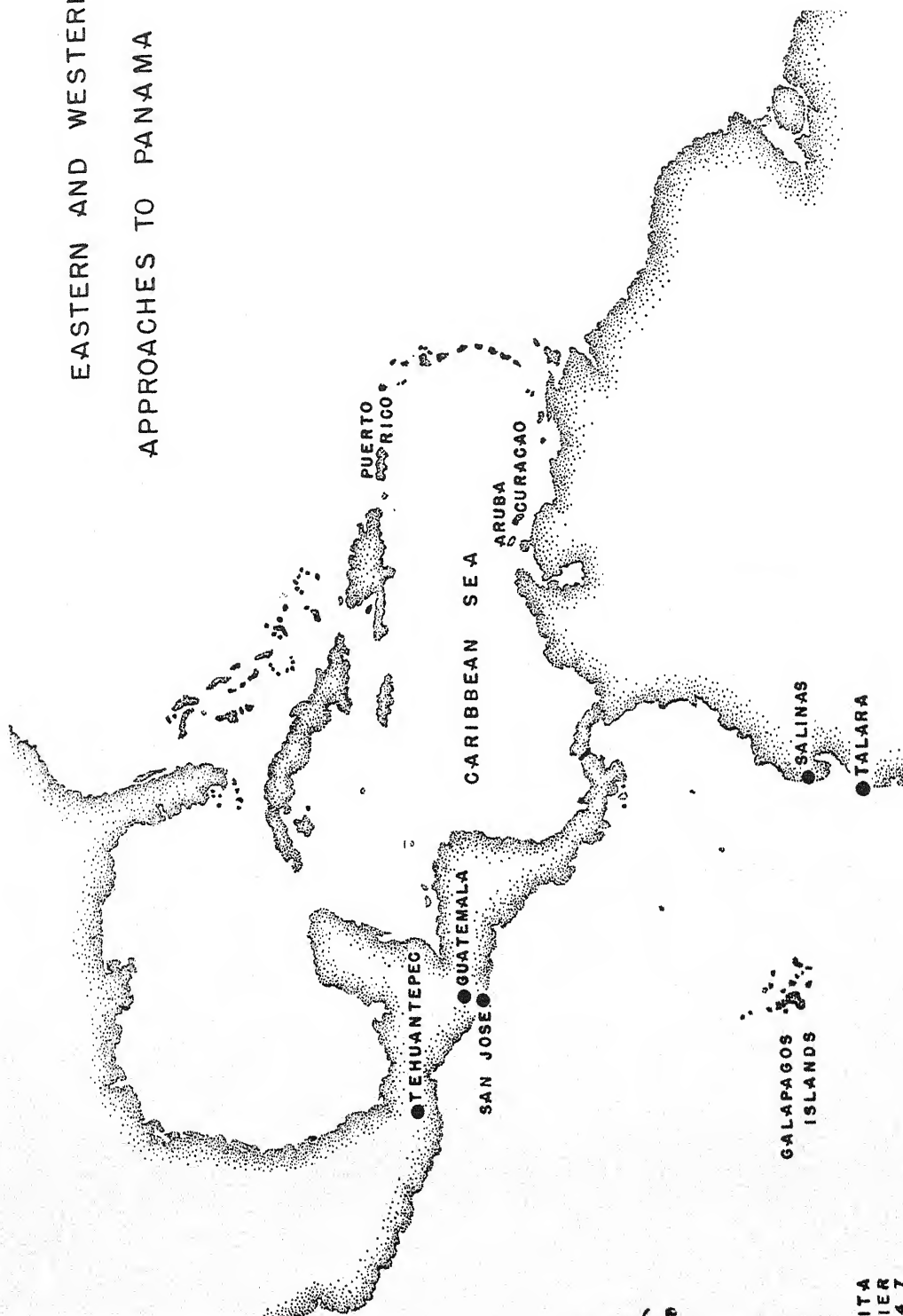
† See below, pp. 641-43.

Watt, the British radar expert, examined Panama defenses and reported the existence of disturbing weaknesses. The canal, in the opinion of the British observer, fully justified the concern being shown for its safety, for it was "unique in the world, possessing only four vital points, each of small area, but each so fragile that a single projectile on any of the four could cut this vital line of communications, and two projectiles on any one of three could prevent its re-establishment within two years."¹⁶¹ He agreed with American strategists that the most probable form of attack was a carrier-based raid from the Pacific and estimated that the Japanese could well afford to sacrifice four carriers in an attempt to block the use of the canal. Secretary Stimson reported to President Roosevelt his conviction that the planes from even one carrier could cripple the canal and that if two or more carriers participated in an attack there would be a strong probability of success. Some means of intercepting carriers far to the west of Panama was urgently needed, because once "a carrier has released its planes for attack, no subsequent means of defense against those planes can sufficiently ensure the safety of the Canal."¹⁶² An adequate defense required early detection—and destruction—of enemy carriers at distances of 500 to 1,000 miles offshore, and since shore-based radars could not reach that distance, the only solution was long-range aerial patrol. Even with such surveillance, a carrier might escape notice long enough to launch its planes, and therefore patrols would need to be supplemented by an effective cordon of coastal radars to provide a twenty-minute warning to alert fighters and antiaircraft batteries for a "last-ditch" defense of the canal.

An adequate patrol on the Pacific side of the canal would require coverage of an arc of 400-mile depth extending from an inner semicircle 600 nautical miles west of Panama to an outer limit of 1,000 miles and from the coast of southern Mexico to northern Peru.¹⁶³ To patrol this extensive zone, aircrews needed the assistance of ASV radar, which could detect ships at distances of twenty-five to fifty miles, and of bases at Tehuantepec in Mexico, at the city of Guatemala or San José in Guatemala, on the Galapagos Islands, at Salinas in Ecuador, and at Talara in Peru.* Of this proposed chain, only the bases at the city of Guatemala and Salinas were in use at the time of Mr. Stimson's visit to the Canal Zone. A field in the Galapagos was under construction in accordance with an agreement with Ecuador

* See map on opposite page.

EASTERN AND WESTERN
APPROACHES TO PANAMA



reached in December, but the runway would not be ready until May 1942.¹⁶⁴ Upon his return to the United States, Secretary Stimson initiated action to secure a base in southern Mexico,¹⁶⁵ but the negotiations were held up by the problem of control of the field that was to be built.¹⁶⁶ Although ASV radars were on their way to Panama, pilots at the time were still depending on visual observation, and the planes were so few in number that even had they all been radar-equipped they would have been unequal to the task assigned. The burden of maintaining the daily patrol was so heavy that no planes could be kept in reserve for a striking force, with the result that even if an enemy carrier had been detected there would have been no way of offering immediate resistance. By mid-1942 the bomber forces available had been improved by the gradual substitution of more modern planes, and, with substantial progress by the AAF in the installation of ASV equipment, the problem of airborne radar as an aid to patrol was no longer critical.¹⁶⁷

The problems involved in providing a serviceable radar screen to alert the inner defenses of the canal were less easily solved. In March 1942, there were only eight early warning radar stations in operation in Panama, with six more under construction.¹⁶⁸ Equipment in use at these stations was inadequate for early warning and "quite useless" for purposes of controlled interception. Sites had been selected for four British-type radars, the sets to be supplied from Canadian production, but improvement in equipment could not overcome deficiencies of operating personnel. Operators in Panama were largely untrained, had been given no indoctrination in the need for precision standards, and were frequently unenthusiastic about their assignment. Radar crews had made no effort to plot the permanent echoes in their search areas, and therefore could not discriminate between such echoes and "live" targets. The combination of inadequate equipment, poor site selection, and untrained operators produced such inefficiency that even the best station in Panama was "far below any acceptable standard of operational utility." The elimination of all the deficiencies noted depended on action by the War Department to provide improved equipment and better trained crews. No complete remedy was available to local commanders.

Conditions among the fighter units themselves had been improved with the addition of more modern equipment, new satellite fields, and facilities for dispersing and concealing aircraft. Effective strength was

reduced, however, by the necessity of using the planes as a supplement to radar in the identification of targets,¹⁶⁹ and indeed no matter how many planes were supplied, the defense of the canal would remain imperfect until better means for detection of an approaching enemy had been provided. This problem was not solved until 1943.

Reinforcements and New Bases for Alaska

Fortunately, when the enemy struck, the blow fell on the Aleutians and not in Panama. The defenses of the Alaskan area were no better prepared, but the stake was smaller. In December 1941, fundamental questions regarding air defense plans in the North Pacific had hardly been solved; it was not until 26 November that the decision had finally been made to build an airfield on Umnak Island for the protection of Dutch Harbor.* Substantial progress had been made under earlier and more limited plans of defense; but only a handful of combat planes were based on Elmendorf Field at Anchorage, and preparations for moving up air reinforcements from the States in the event of an emergency were still imperfect.¹⁷⁰

After the Japanese attack on Pearl Harbor that emergency seemed unmistakably imminent. The Chief of Staff informed the President in January 1942 that the War Department feared a damaging raid on Alaska "at any moment," and prophesied that as soon as the Japanese could assemble troops and ships they would launch an effort toward "actual occupation" of a base in that area.¹⁷¹ This prospect had led to a prompt decision to send aerial reinforcements to the threatened outpost, even in the face of the well-understood risks of winter flights along imperfectly developed airways.¹⁷² Because Alaska was part of the Western Theater of Operations, responsibility for the movement was assigned to the Western Defense Command. The shortage of trained aircrews made it necessary to assign to this project squadrons composed of men untrained in Alaskan flight conditions. A pursuit squadron of twenty-five P-40's was secured by assignment of the 11th Pursuit Squadron from Meridian, Mississippi, and thirteen B-26 medium bombers were ordered to be flown to Alaska by the 77th Bombardment Squadron from Boise, Idaho.

Notification of the movement was given on 10 December 1941, but two weeks elapsed before the planes reached the Sacramento Air Depot to be winterized. Hastily conceived and inadequately organ-

* See above, pp. 167-68.

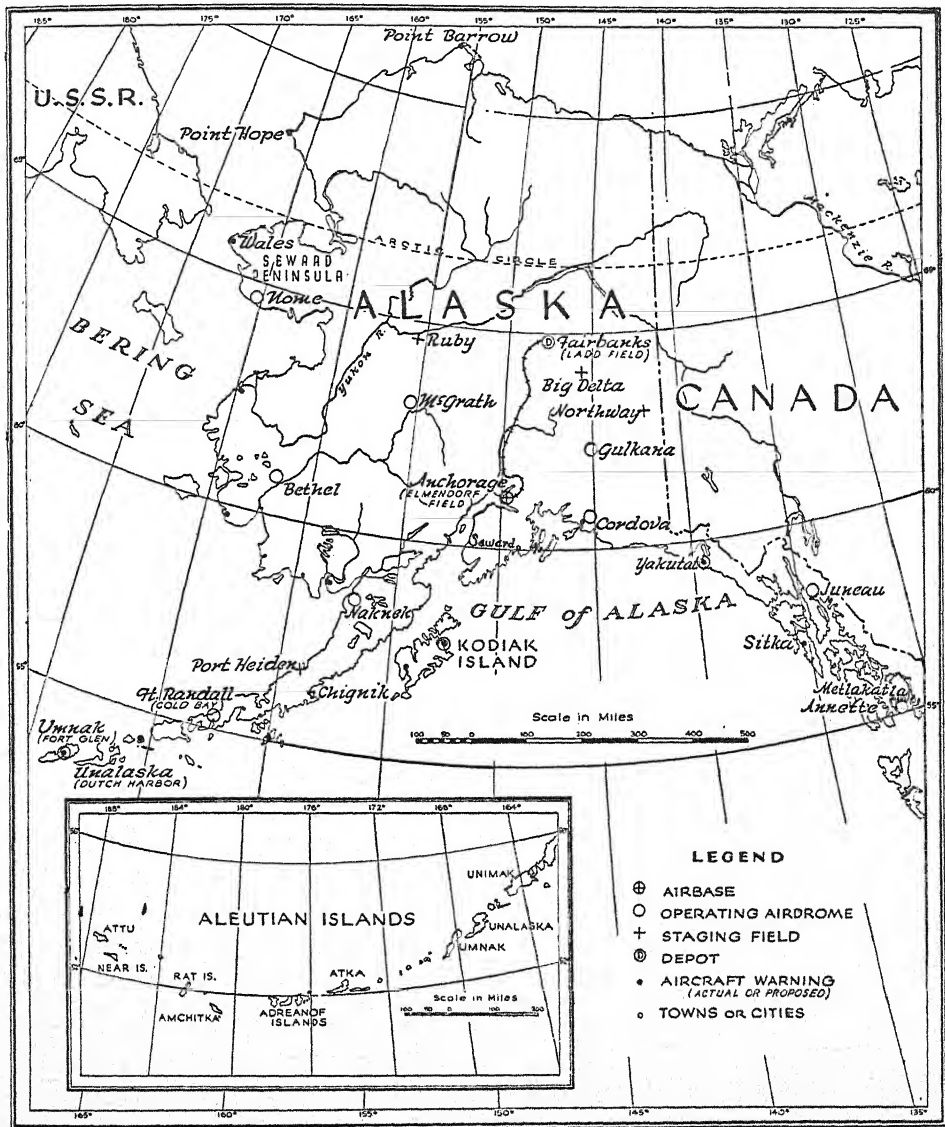
ized, the movement encountered a series of discouraging setbacks: the depot was so congested with "extra priority" work that prompt action on the winterization was impossible, cold-weather equipment proved to be hard to obtain, and bad weather delayed test flights and caused the loss of some of the planes. It was not until 1 January 1942 that the first planes left Sacramento. It was expected that the movement to Spokane and thence by an inland route through Canada to Fairbanks would be rapidly completed, but the inexperience of the pilots, together with poor communications and inadequate landing fields along the route, delayed execution of the plan. By 25 January only thirteen of the twenty-five pursuit ships had reached Alaska in flyable condition, while six were still en route, and six had crashed. Of the thirteen medium bombers, eight had arrived at Fairbanks, but the other five had been wrecked beyond repair. It was clear that only crews experienced in Alaskan conditions could be used on such flights, and accordingly the unfinished task of forwarding the aircraft was taken over by veteran pilots of the Alaskan Air Force. This ill-fated winter project emphasized the need for special training of squadrons assigned to Alaska, and during the spring of 1942 familiarization flights between continental bases and fields in Alaska were conducted by the Fourth Air Force in preparation for such reinforcement of Alaskan bases as might be required.¹⁷³

Equally important was the effort to complete the construction of necessary bases in Alaska and the Aleutian Islands. In the Joint Board decision of 26 November 1941 to build an air base on Umnak Island for protection of the naval base at Dutch Harbor, it had been specified that work on the new field would not be pushed at the expense of previously approved projects in presumably more vital areas.¹⁷⁴ After Pearl Harbor, however, it was clear that construction of the Umnak base presented a task of the highest priority, as also did rapid completion of an intermediate field which the Civil Aeronautics Administration had undertaken to build at Cold Bay.¹⁷⁵ Lying between Kodiak and Dutch Harbor, the latter base could be used in support of actions at either of those two points.

It was not only necessary to move fast but at the same time to act with the greatest possible secrecy. As an aid to concealment of construction efforts from the enemy, the Army operated under the cover of fictitious corporations. For the Cold Bay project "Saxton and Company" was invented, and, in its name, equipment and supplies were

DEFENSE OF THE WESTERN HEMISPHERE

purchased and personnel employed, ostensibly for construction of a fish cannery. At Umnak the "Blair Packing Company" served to mask the actual operations of Army engineers. Bulldozers, scrapers, and graders were crated in the United States and rushed to the Aleutians under labels which identified them as cannery equipment. The efforts of the two dummy corporations were directed by a holding company,



the "Consolidated Packing Company," in whose name the Alaska Defense Command issued its directives. Prospects for completing the work in advance of an anticipated spring attack on Dutch Harbor were greatly improved when news was received in Alaska at the end of January that 3,000,000 square feet of pierced steel-plank matting suitable for use over unstable ground would be shipped from the United States at once. The original plan to lay paved runways was accordingly abandoned and completion of the task at Umnak and Cold Bay was greatly accelerated.¹⁷⁶

Even so, the work was carried forward under heart-breaking conditions.¹⁷⁷ The first troops, the 807th Engineers (Aviation), arrived in the Umnak area on 17 January, but in the absence of a suitable harbor on Umnak it was necessary to land them at Chernofski on Unalaska Island at a point separated from the site selected for the airfield by eleven miles of very rough water. After a full month had passed, only half of the company had been transferred, in barges, to Umnak. The arrival at Chernofski of a transport early in March with 5,000 tons of cargo, approximately half of which was steel matting, permitted a start on the main construction. On 11 March the rest of the troops were transferred from Chernofski to Umnak, and the next day work began on stripping the field in preparation for the laying of steel mats. Despite bad weather, rapid progress was made. There were some 80,000 mats, each of them weighing approximately 65 pounds, which had to be unloaded from the hold of the transport in Chernofski harbor, ferried across the treacherous waters of Umnak Pass by barge, transferred piece by piece and by hand from the barge to the beach, and then loaded on "cat-trains" to be hauled to the runway. Exceptionally vicious winds and several inches of snow impeded the effort, and some of the men worked without the protection of heavy gloves; but they kept at it in eight-hour shifts with three shifts per day for seven days a week, and by 30 March all the mats had been brought to Umnak. Meanwhile, laying of the mats had been begun on 23 March, and by 5 April a runway 5,000 feet long and 100 feet wide had been completed. Indeed, the first plane, a transport, landed on the new runway as early as 31 March, but much remained to be done before the field could be made ready for combat. Additional engineer troops and some civilian workmen, who arrived on 11 April, speeded up the effort to widen the runway, to build hardstands and revetments, and to undertake other necessary construction. The first combat planes flew in

from mainland bases on 20 May. The Umnak field was still far from complete, but American land-based planes would be on hand to greet the Japanese in June. Not even the Seabees would tackle a more difficult job than that credited on Umnak Island to the Army's aviation engineers.

By 1 June the Eleventh Air Force, so designated on 5 February, had been greatly increased in size and strength. Brig. Gen. William O. Butler had assumed command in March. From a force of just over 2,200 on 6 December 1941, it had risen to double that strength seven months later. To the 23d Air Base Group, the 18th Pursuit Squadron, and the 28th Composite Group (comprised of the 73d Bombardment Squadron [M] and the 36th Bombardment Squadron [H]), had been added the 11th and 54th Fighter squadrons* (the latter on 31 May) and the 77th Bombardment Squadron (M). The force also included the 42d Transport Squadron, activated in May.¹⁷⁸ Much of the equipment of P-40's, P-39's, P-38's, B-17's, and B-26's, however, was received from the United States only in the weeks and days immediately preceding the Japanese attack on Dutch Harbor.[†]

Meantime, the new base at Cold Bay had also been put in a state of readiness.¹⁷⁹ But the provision of additional planes and new bases in the Alaskan area left one grave weakness in its defense, for there was still no adequate aircraft warning service. The existence of extensive uninhabited regions made it impossible to develop an Alaskan ground observer corps, with the result that a warning net had to depend almost entirely upon radar. And in addition to the shortages of equipment and trained men which prevailed elsewhere, special problems impeded efforts to provide radar equipment for Alaska. Sites were usually inaccessible by road, and in most cases there were no landing fields close enough to permit the aerial supply of radar stations. Thus it became necessary to move equipment by small boats when the pack ice permitted; and, because of these problems of transportation, a radar set installed in Alaska—even the so-called mobile equipment—tended to become a fixed station. The time and labor required was made the greater by the necessity to provide quarters for the operators.¹⁸⁰ These considerations made it particularly unfortunate that the directives governing earlier site selection had been imperfect. The necessary

* AAF pursuit and interceptor units had been redesignated "fighter" on 15 May.

† See below, pp. 462-65.

work of resiting Alaskan radar installations was further complicated by an involved command situation which made it necessary to refer recommendations of the fighter command of the Eleventh Air Force through regular channels to the Western Defense Command. Worse still, there was a procedure in effect which required that proposed changes in radar sites be processed through the War Department before corrective action could be instituted.¹⁸¹ Indeed, there was not even an agreement in early 1942 as to how extensive a warning net was required for Alaska. General DeWitt of the Western Defense Command presented in January a strong plea for a "cordon" defense based on a screen of twenty radar sets so arranged as to guard all vital military installations.¹⁸² Officers in Washington found that commitments to other theaters made it impossible to provide all of the equipment that would be required and reduced the number of stations to ten.¹⁸³ By June 1942, however, not even this minimum figure had been provided, for only two radar sets were in operation in Alaska, with two more en route.¹⁸⁴ As a result, the Eleventh Air Force had to depend on bomber patrols for intelligence of enemy movements. The assignment in March 1942 of four heavy bombers equipped with ASV radars made the use of such aerial patrols more efficient,¹⁸⁵ but the lack of an aircraft warning service was keenly felt.

Only in the Aleutians and along the water routes of the western Atlantic and the Caribbean did our enemies make any serious effort to test the defenses of the Western Hemisphere, and it was fortunate that this proved true. The war found us, as this chapter has shown, by no means ready for large-scale enemy attack. To remedy the many deficiencies revealed at the outset, it was necessary to immobilize on purely defensive assignments substantial forces for which there was urgent need overseas, to divert from offensive preparations time, energy, and productive capacity, and to improvise and in other ways to rely upon uneconomical methods. Yet, when the test came, it was met, though hardly by a comfortable margin, and events proved that the gauge of the enemy's intentions and capabilities had been well enough taken. Our strategy in defense of hemisphere security from the first had been to intercept the enemy at the greatest possible distance from our own shores and to carry the battle to him. Though the unexpected exposure of our western coast by the defeat at Pearl Harbor gave us some uneasy moments, there was no popular hysteria to shake the commitment to predetermined strategy. Preparations for taking

the offensive proceeded apace with efforts to bolster our immediate defenses. By the fall of 1942 we had turned on our pursuers in the Pacific, and, counting many benefits from that outward extension of hemispheric defenses in the Atlantic which marked prewar policy, we were ready to open the attack 3,000 miles from our shores. All things considered, the record stands in our favor though it can hardly be recommended in all particulars as a guide to future policy.

CHAPTER 9

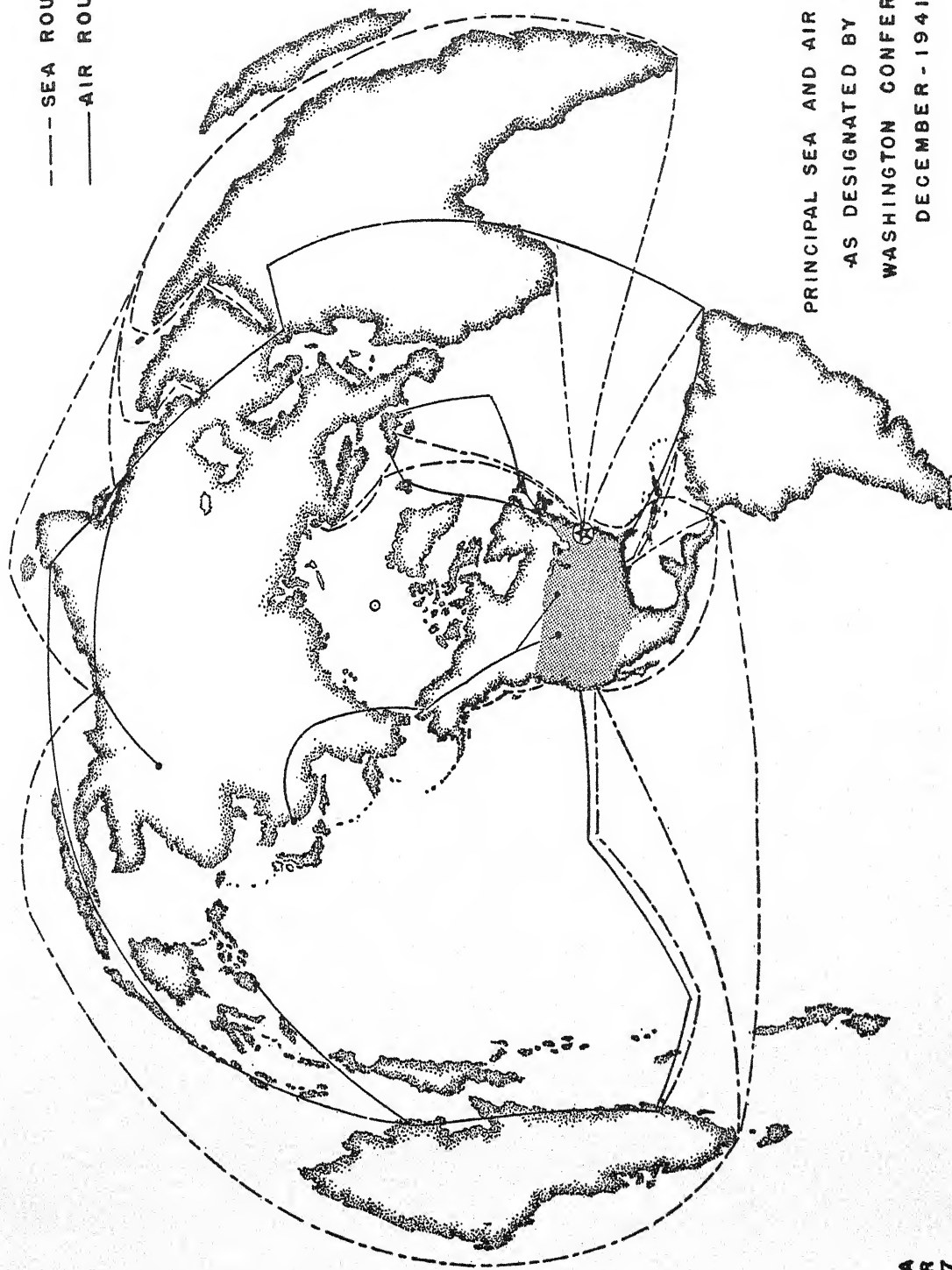
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THE EARLY DEVELOPMENT OF AIR TRANSPORT AND FERRYING

A FACTOR underlying and shaping American strategy from the very first in World War II was the great distance separating each of the active theaters of war from the main source of supply in the United States. In establishing overseas lines of supply, the armed forces had of necessity to rely most heavily on water transport. There was no other possible means of moving the bulk of the military forces and the enormous tonnages required to support large-scale operations so far from the home base. But the very nature of the war, and especially the urgent demands for a speedy reinforcement of our outposts during the first months of hostilities, made it imperative that a system of air supply be developed, supplementary to the older and slower methods of surface transport. The fastest and most economical method of moving combat aircraft from the factory to the front—which might be 10,000 to 15,000 miles away—was to ferry them under their own power. To keep them in battle at their highest efficiency, an air transport service for the rapid delivery of spare engines and parts, auxiliary equipment of all kinds, flight crews, and ground personnel was an absolute necessity. This, in the simplest terms, was the primary purpose of the long-range military air transportation system developed by the Army Air Forces, although it was put to many other uses during the course of the war.¹

The combined strategy devised by the British and American staffs at the Washington conference of December 1941 had embodied, in addition to a long-range plan of action, certain immediate objectives to be attained in 1942. These were, first, to make secure important areas of war production likely to be attacked, and second, to provide for the security of the principal sea routes and seven main air routes over

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— AIR ROUTES



PRINCIPAL SEA AND AIR ROUTES
AS DESIGNATED BY THE
WASHINGTON CONFERENCE
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which men and supplies could be moved to the battlefronts.² While the conference was still in session it had become clear that the Philippines could not be held, principally because the Japanese had cut the only sea and air lanes over which available reinforcements, such as they were, could reach MacArthur. By the end of February 1942, the air connection between India and Australia was also cut, although some heavy bombers and other reinforcements from the United States were able to get through before the Japanese captured Singapore and overran the Netherlands East Indies. The Australia-Philippines and the Australia-India air routes, included in the seven declared to be of the highest strategic importance, were thus lost in the first shock of the Japanese attack. Fortunately for the Allies, the five remaining major routes were held. Each of the five had its beginning within the continental United States and reached out from the main arsenal of the United Nations to one or more of the major theaters of war: (1) the northeastern route, earliest to be developed for military purposes, provided an air connection with Great Britain; (2) the northwest route, with Alaska and the Russian front by way of Siberia; (3) the South Pacific route, with Australia and the western Pacific islands; (4) the southeastern route, with Africa, the Middle East, India, China, and, for a brief time, the Southwest Pacific area; and (5) the mid-Atlantic route, with Europe and North Africa by way of the Azores. While this fifth trunk route was not opened until late 1943, the United States and Great Britain were at all times prepared to occupy the Azores had the security and future use of the route been threatened by the Axis.

During the early period of American participation in the war the southeastern route to Africa and beyond assumed an importance far surpassing that of any of the others.³ In contrast to the slowness with which the North Atlantic route, as well as the newly developed South Pacific and Alaskan routes, came into use during the months following 7 December, the South Atlantic airway was forced at once to support a heavy volume of air traffic that strained its facilities and personnel to the limit. Lend-lease aircraft and supplies were sent over the route to the British forces in Egypt and to the Russians through Iran, with a smaller volume going via India into China. The earliest heavy bomber reinforcements sent to American air forces in the Southwest Pacific following the Japanese attack were moved over the route, as were most of the aircraft and crews that would form the nuclei of the Ninth

Air Force in the Middle East and the Tenth Air Force in India. Fighter aircraft for the Ninth and Tenth Air Forces and for the American Volunteer Group in China were shipped by water to the west coast of Africa and were then ferried overland to their destinations. And, while ferrying operations were increasing steadily, an air transport service in support of both ferrying and combat operations was enlarged and extended.

The ferrying service and the air transport service developed by the AAF in World War II operated over the same routes, used the same bases, and were interdependent to such a degree that control was lodged in a single military agency. Known originally as the Air Corps Ferrying Command, it became the Air Transport Command in June 1942.

The Air Corps Ferrying Command

The Air Corps Ferrying Command had its origins in 1941 in an attempt to assist the British in the delivery of American-built aircraft to England. The British had pointed the way toward development of long-range strategic air supply services by establishing early in the war air supply lines from North America to the United Kingdom and from the home base to the Middle East.* In November 1940 a Canadian civilian agency under contract with the British government began the ferrying of American-built bombers across the North Atlantic from Newfoundland to Scotland, a distance of approximately 2,100 miles. This was the first step in the spanning of the Atlantic with an aerial supply bridge, comparable as a development in military supply to the first use of the railroad as a logistical instrument in the wars of the nineteenth century. The hazardous route across the North Atlantic constituted, however, only one segment of a long supply line that reached from the factories of southern California to the airfields of Britain. The bombers, purchased for cash from American manufacturers prior to the passage of the Lend-Lease Act, were first ferried by factory-employed pilots from California to Montreal. There they were turned over to the civilian pilots of the British Atlantic

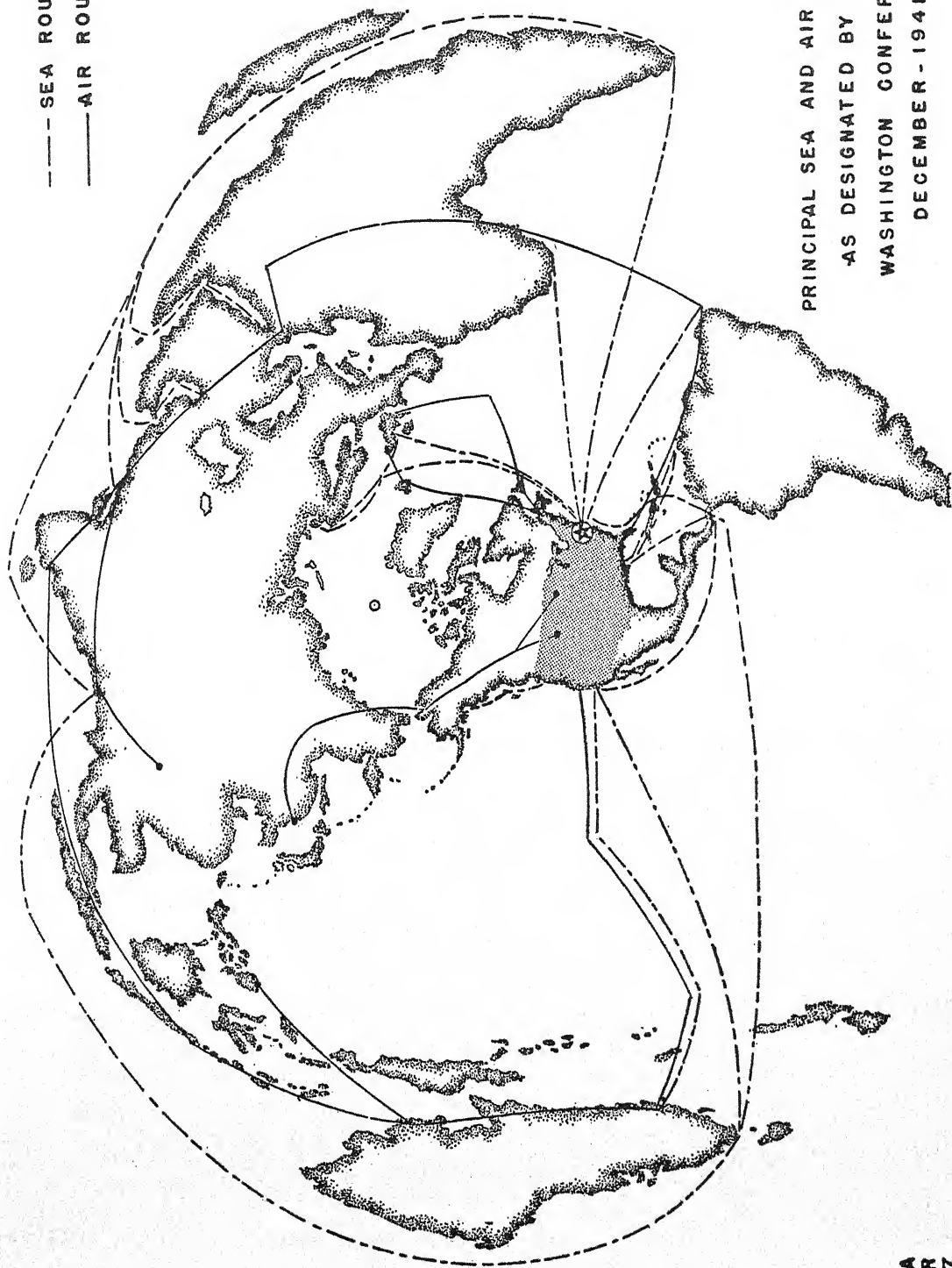
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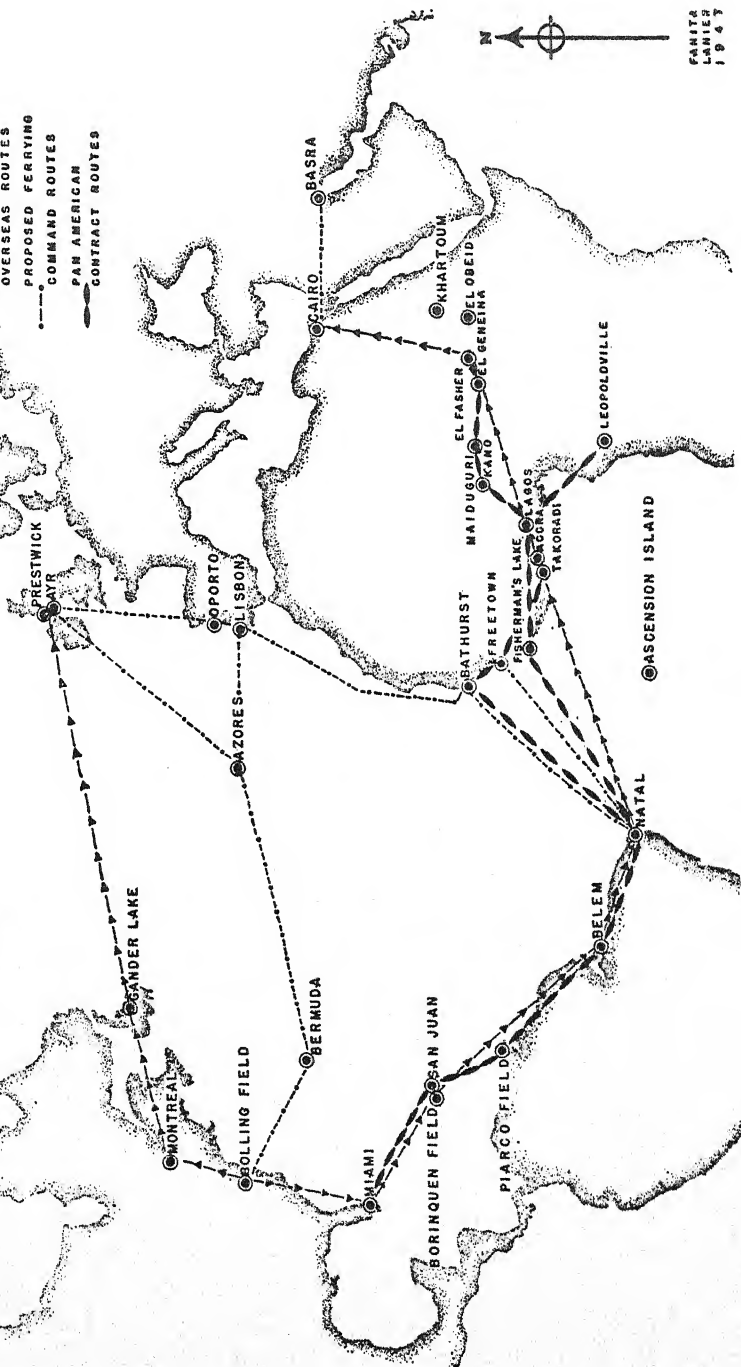
ferrying organization for the flight to Scotland. By ferrying these bombers under their own power, vital shipping space was saved and factory-to-combat delivery time was cut from approximately three months to less than ten days.⁴

The British ferrying service was well under way when the Lend-Lease Act became law on 11 March 1941. Improving weather conditions in the spring of 1941 and increasing aircraft production made possible a speedup in trans-Atlantic deliveries, but the Atlantic ferrying organization, or ATFFERO as it became known when taken over directly by the British Ministry of Aircraft Production, experienced considerable difficulty in recruiting a sufficient number of pilots and other crew members to maintain schedules. The War Department at the time was attempting, not too successfully, to assist the British in employing additional pilots in the United States,⁵ and the British themselves were forced to withdraw some pilots from combat units for ferrying duty. A solution to the problem was made possible by the Lend-Lease Act. On 21 April, General Arnold wired from London, where he was then conferring with British officials as to means of extending aid, proposing that the United States Army Air Corps take over responsibility for the ferrying of British aircraft from the factories to Montreal. Two major ends to be achieved were set forth in the message. American military pilots would be able to acquire highly useful training in flying the latest types of combat aircraft; and civilian pilots then employed by the factories would be released for service with ATFFERO in delivering the aircraft across the Atlantic.⁶ Hard pressed for pilots, the British received General Arnold's proposal with enthusiasm and readily consented to give official sanction to American use of British-owned aircraft for training purposes within the United States.⁷

In the course of discussions between representatives of the two countries during the month that followed, consideration was given to a plan favored by the War Department by which the United States would take over control of the whole ferrying operation from the factories to Britain. But to certain features of this plan Brig. Gen. Carl Spaatz, then on the staff of the Chief of the Air Corps, raised objections which seemed convincing.⁸ President Roosevelt decided to adopt the more modest proposal of General Arnold of 21 April and to leave to the British the job of flying the aircraft across the Atlantic. On 28 May the President directed the Secretary of War to take full respon-

ATLANTIC FERRYING AND TRANSPORT ROUTES PRIOR TO 7 DECEMBER 1941

- FERRYING COMMAND
- OVERSEAS ROUTES
- PROPOSED FERRYING
- COMMAND ROUTES
- PAN AMERICAN
- CONTRACT ROUTES



1941

sibility for delivering to the point of ultimate take-off those planes, other than PBY flying boats, that were to be flown to England. Fully aware of the need for haste, he expressed the desire "to cut through all the formalities that are not legally prohibitive and help the British get this job done with dispatch."⁹

The job of delivering the aircraft was given to a new agency, the Air Corps Ferrying Command, created specifically for the purpose. On 29 May 1941, Col. Robert Olds of the Plans Division, Office of the Chief of the Air Corps, received verbal orders to organize the ferrying service.¹⁰ A week later, on 5 June, the Air Corps Ferrying Command was officially constituted as of 29 May.¹¹ The mission of the new command was, first, "to move aircraft by air from factories to such terminals as may be designated by the Chief of the Air Corps," and second, "to maintain such special air ferry service [i.e., air transport service] as may be required to meet specific situations."¹² These were broad powers, and working within them the Ferrying Command eventually expanded far beyond the limits imagined by those responsible for its creation. The second assignment provided specific authority for the establishment of a military air transport service over the North Atlantic between Washington and the United Kingdom, a project which had been under consideration for some months.¹³

For crews to do the cross-country ferrying work, once the factory pilots were replaced in mid-July, the Ferrying Command relied initially on two-engine and single-engine pilots detailed from the Air Force Combat Command for thirty- to ninety-day tours of temporary duty. More highly qualified four-engine pilots of the Combat Command, as well as navigators and other crew members, were borrowed to fly the trans-Atlantic transport shuttle. In the summer and fall of 1941 approximately 200 pilots were trained at Barksdale Field, Louisiana, especially for ferrying duty, although they were assigned to the Combat Command and served, as did the others, on temporary-duty status with the Ferrying Command.¹⁴

During the six months between 6 June 1941, when the Ferrying Command assumed nominal control over deliveries to the British, and the Pearl Harbor attack, approximately 1,350 aircraft were ferried to points of transfer, nearly all by pilots of the Air Corps. Over 90 per cent of these deliveries were made from West Coast factories to the British in Canada or at points on the Atlantic seaboard. Two types of the latest twin-engine attack bombers—Bostons (DB-7's, the British

version of the A-20A) and Hudsons (A-29's)—were the most numerous, but a large number of AT-6 Harvard trainers were flown to RAF training fields in Canada. Most of the Bostons were flown to the Floyd Bennett Airport, New York, for water shipment to Britain, while some were shipped out of New Orleans and Savannah. The majority of the Hudsons were delivered at Montreal to the RAF Ferry Command, which had been created in July 1941 to take over the work of ATFERO, and were flown from there to Newfoundland and across the Atlantic to Scotland. Some sixty Liberator bombers were also turned over to the RAF at Montreal.¹⁵

During the fall of 1941 the Ferrying Command had assumed an additional responsibility for delivery of some of the AAF's own planes from factory to stations within the United States.¹⁶ These deliveries were relatively few in proportion to the whole, however, and until 7 December the primary task of the command remained that of assisting in the movement of British aircraft to Canada or to eastern ports for shipment to England. But after Pearl Harbor the domestic ferrying of American aircraft quickly became a major function of the command, and one, in time, of such huge proportions that the AAF had reason to congratulate itself on the possession of an agency already organized for and experienced in the work. From the domestic ferrying assignment it was only a step to the taking over by the command of responsibility for delivering or supervising the delivery of AAF and lend-lease aircraft to theaters of war scattered over the world.

For assumption of this new responsibility, the Ferrying Command had been partly prepared by its operation through the latter half of 1941 of an overseas transport service. As relations between the United States and Great Britain had grown closer through the spring of 1941, the need for a more rapid means of transportation between the two countries than could be provided by surface vessels became increasingly urgent. Through the establishment of an air service across the Atlantic, the diplomatic mail and important military and diplomatic officials of the two countries could move back and forth with the speed demanded by the course of events; and, when the American government decided to open such a service in the summer of 1941, it was placed under the control of the newly created Ferrying Command.¹⁷ The AAF's pioneer overseas transport service began operations on 1 July, when a B-24 piloted by Lt. Col. Caleb V. Haynes took

off from Bolling Field, Washington, D.C., bound for Scotland by way of Montreal and Newfoundland. Between that date and mid-October, when the service was forced to close down by the approach of winter, an average of six round trips a month had been flown. Modified B-24's were used on all the trips, the passengers sitting in the bomb bays.¹⁸

The "Arnold Line," as the British termed it in tribute to the Chief of the Army Air Forces, regularly operated over a route that ran from Bolling Field to Montreal to Gander Lake, Newfoundland, thence across the Atlantic to Ayr, Scotland, and return. There were three special trips, however, that departed considerably from the regular run. One of these carried Capt. Elliott Roosevelt during the summer on an aerial survey of the east coast of Greenland in a search for a suitable site for an airdrome on the far-northern ferry route to Britain. Capt. James H. Rothrock, a veteran of the North Atlantic run, piloted the plane.¹⁹ In September, two B-24's of the service were employed in transporting a portion of the Harriman mission to Moscow by way of Great Britain. On the Scotland-to-Moscow leg of the journey the two planes, piloted by Maj. Alva L. Harvey and Lt. Louis T. Reichers, took a circular route north of the Scandinavian peninsula and flew a nonstop distance of 3,150 miles before reaching the Soviet capital. From Moscow, Major Harvey proceeded on a globe-encircling homeward flight by way of the Middle East, India, Singapore, Darwin, Port Moresby, and Wake Island to Hawaii and Washington.²⁰ Lieutenant Reichers took a route by way of Cairo across central Africa, the South Atlantic, and up through Brazil to the United States.²¹ Both of these exploratory flights involved hazardous landings at undeveloped airfields barely able to accommodate the heavy bombers and take-offs into all kinds of weather without briefing, weather information, adequate communications, or maps. Their importance was generally overlooked in the excitement of the greater events of the war; but the recorded experiences and observations of the two pilots were of the utmost value to the AAF in planning for the development of two of its major overseas air lanes—the Pacific and the South Atlantic routes.

The aircraft ferried over the North Atlantic route to Britain prior to American involvement in the war were, with few exceptions, purchased for cash on orders placed in 1939 and 1940. Of the approximately 2,400 planes of American manufacture delivered by air or by

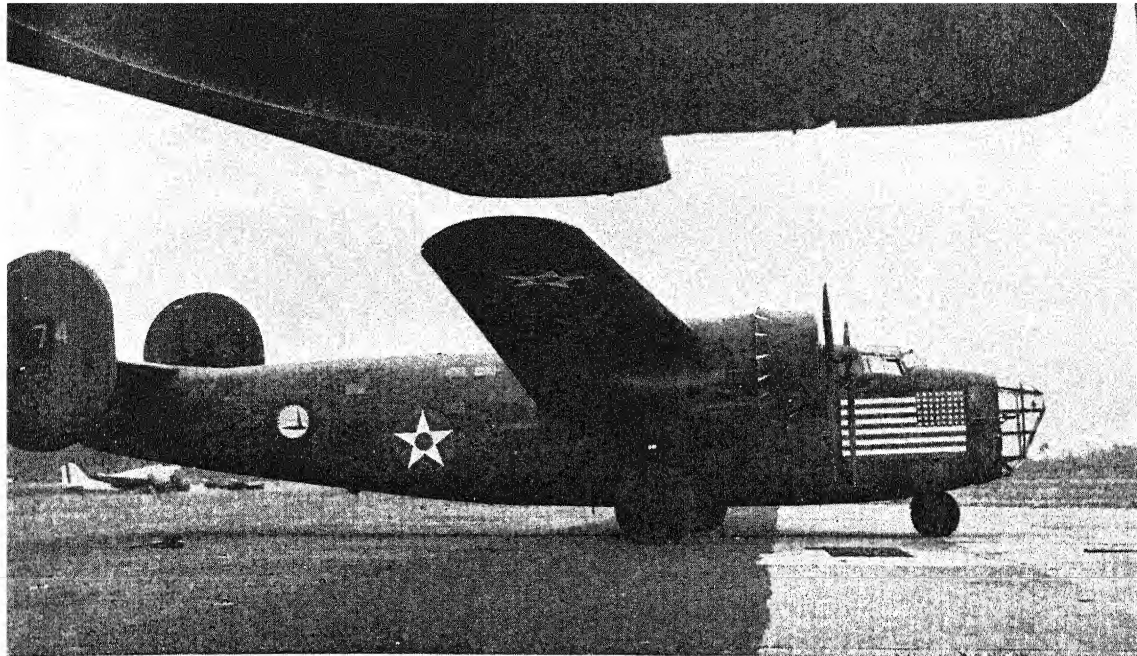
surface vessel to British forces in the United Kingdom or in the Middle East between the passage of the Lend-Lease Act and the end of 1941, less than 100 were sent under lend-lease.²² Aircraft purchased during the cash-and-carry period and scheduled for delivery in 1941 were earmarked chiefly for service in the British Isles, and thus the earliest ferrying activity of the AAF, like its initial overseas transport service, was marked by a focus on the North Atlantic route.

At the same time, important steps had been taken during 1941 toward the development of a South Atlantic air route joining the United States to Africa and the Middle East. Compared with the 2,700 miles that lay between northern Maine and Great Britain along a direct route through Newfoundland, 10,000 miles separated Miami from Cairo.²³ An airplane leaving southern Florida traveled 4,000 miles in a southeasterly direction before reaching Natal on the Brazilian bulge. Pivoting at Natal, it had to traverse an additional 6,000 miles in order to reach Cairo. But compensating in part for the great length of the southern route were certain favorable geographical factors. It had the advantage of year-around flying weather, while over the North Atlantic route ferrying and transport operations were seriously hampered or even shut down altogether by bad weather conditions during the winter. Most of the southern route lay over two great land masses, the South American and African continents. Through the Caribbean the Antilles chain formed convenient steppingstones from Florida to the Guianas. For a time the Atlantic—approximately 1,800 miles at the narrowest—presented a formidable barrier to the movement of two-engine aircraft from continent to continent. But with the opening of an air base on Ascension Island in July 1942, the ocean crossing was divided into two fairly easy stages and ceased to be a serious operational problem.²⁴

The major part of the route to the Middle East passed over either Brazilian territory or that controlled by Great Britain. Brazil was completely co-operative in permitting American aircraft of all types, whether manned by military or civilian crews, to fly over her territory or land at bases on her soil.²⁵ Here was a case of the Good Neighbor policy paying practical dividends. Britain, the chief recipient of lend-lease aid in the form of supplies sent by air to Africa, was able to contribute a number of sites for bases all along the southeastern route. In the Caribbean the United States secured, through the destroyer-base lease agreement, sites for air bases on the islands of Trinidad, Jamaica,

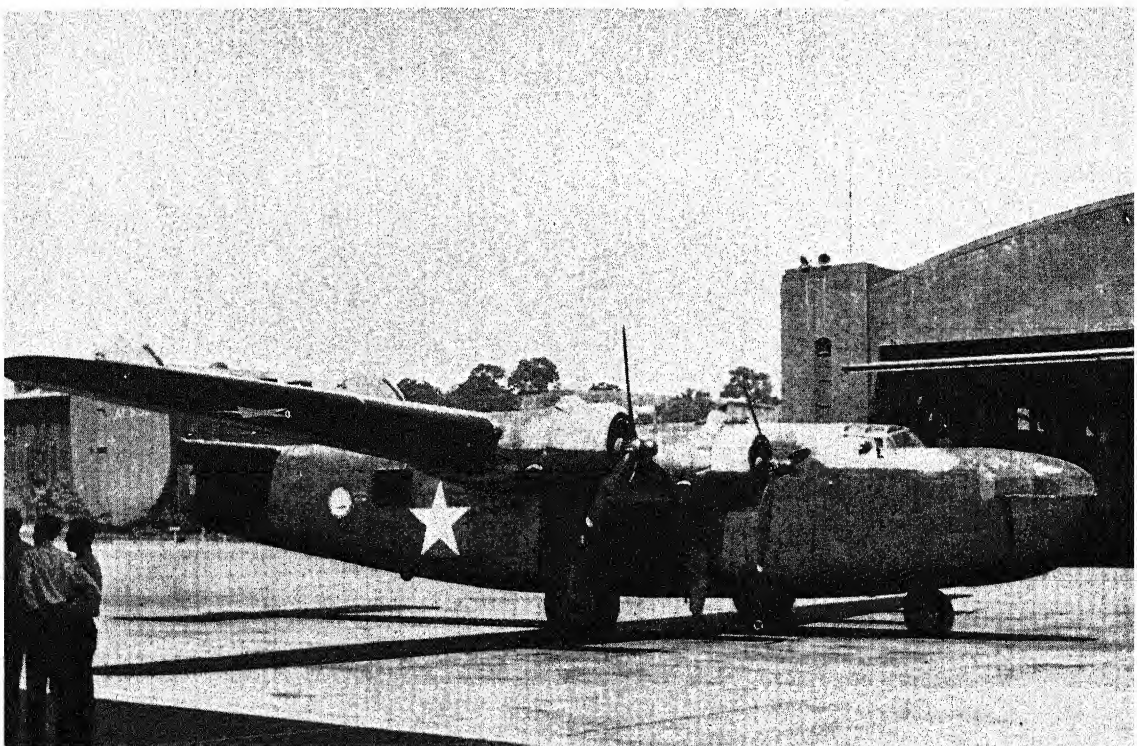
St. Lucia, and Antigua, and in British Guiana on the South American continent.²⁶ The Trinidad and British Guiana bases became major stopping points for transient aircraft, bridging the 2,000 miles that separated Puerto Rico from Belem, Brazil, the northernmost base in that country capable of handling heavy traffic. The base on Ascension Island was located on British territory, as were most of the bases along the west coast of Africa and across central Africa to Cairo.

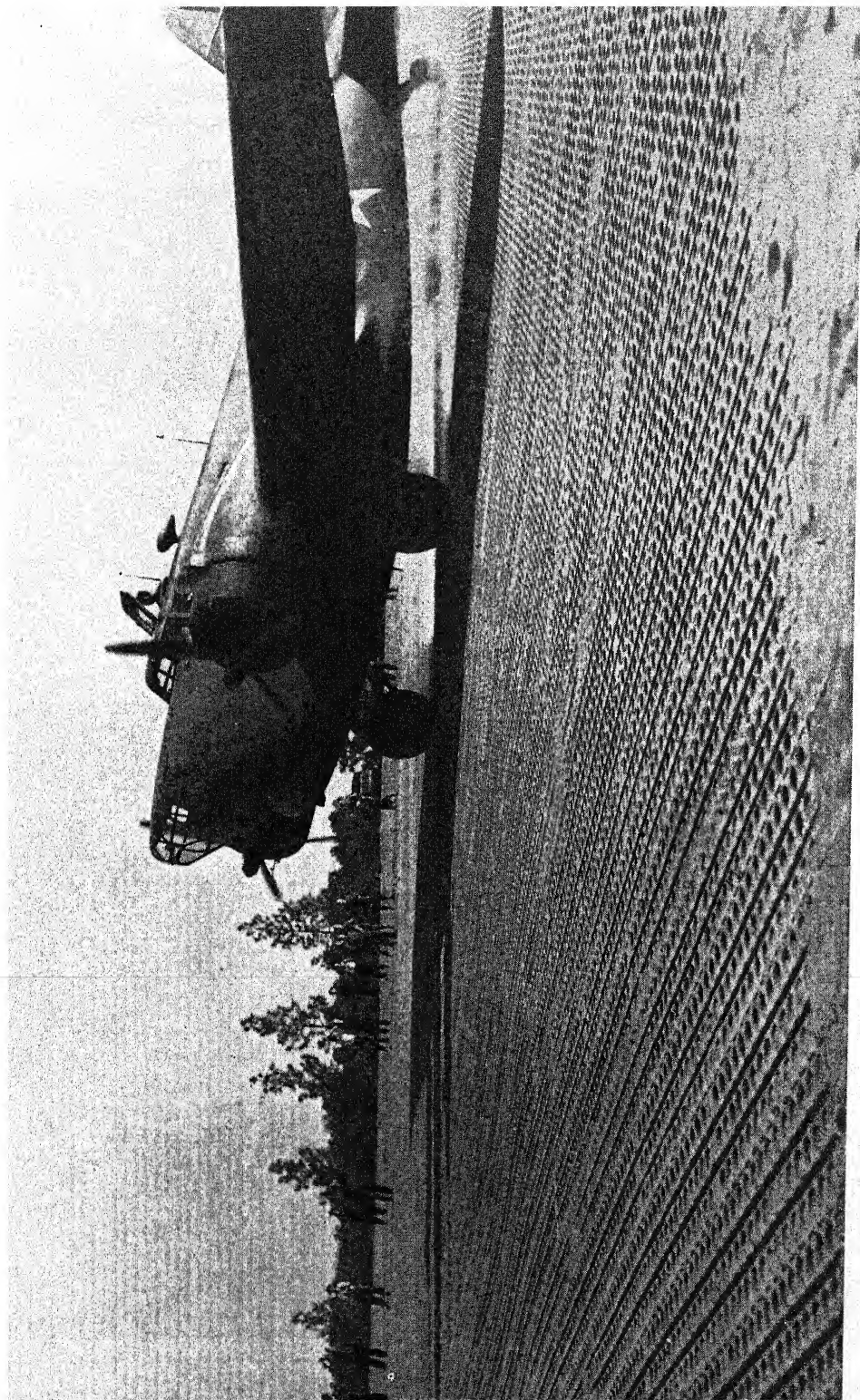
Ferrying operations over the South Atlantic route had begun in June 1941, when Atlantic Airways, Ltd., a Pan American Airways subsidiary corporation organized especially for the job, undertook to deliver twenty transport-type aircraft to the British in western Africa. Shortly after the passage of the Lend-Lease Act, the British government had requested, under terms of the act, a minimum of fifty transport planes for its trans-African operation.²⁷ These planes were to be placed on the run between Takoradi in the Gold Coast Colony and Cairo—an airway of the highest strategic value in the line of communications between the British Isles and the Middle East. The trans-African route had been pioneered by the British in the immediate prewar years, and at the outbreak of the war Imperial Airways maintained a regular transport service over the run between Khartoum in the Anglo-Egyptian Sudan and Lagos on the Nigerian coast. Coastal bases had been constructed at Bathurst (Gambia), Freetown (Sierra Leone), and at Takoradi and Accra in the Gold Coast Colony. Across the waist of Africa, airfields had been cut from the jungle or laid out on the desert at Kano and Maiduguri in Nigeria, at Fort Lamy in French Equatorial Africa, and at El Geneina, El Fasher, and El Obeid in the Anglo-Egyptian Sudan. With the loss of the French fleet in 1940 and the growing activity in the spring of 1941 of German air forces based on Sicily, the British line of air and water communications with Egypt by way of the Mediterranean was virtually closed. Fortunately, the existence of the trans-African air route enabled the British to avoid shipping aircraft by water all the way around Africa and up through the Red Sea to Egypt. A large base and an assembly plant were developed at Takoradi, and here fighter and bomber aircraft, waterborne from Britain, were assembled, tested, and then ferried across Africa to Cairo. Beginning in the fall of 1940, British ferry pilots began moving Hurricanes and Blenheims along this route. The ferrying operation demanded also a transport service for returning



B-24A'S USED IN THE FERRYING COMMAND'S PIONEER NORTH ATLANTIC TRANSPORT SERVICE

AN LB-30 USED IN PACIFIC TRANSPORT SERVICE INAUGURATED IN THE SPRING OF 1942





FIRST TEST LANDING ON STEEL MATTING, CAROLINA MANEUVERS, 1941

pilots to Takoradi following the completion of deliveries to Cairo, and for hauling critical items of supply east from Takoradi.²⁸

Realizing the importance of maintaining and increasing the scope of the trans-African operation, the United States government, acting through the Civil Aeronautics Administration, undertook to secure the transport aircraft from the civil airlines. Of the fifty requested, however, only twenty could be spared by the airlines, and no Army planes were available.²⁹ And when the job of getting the planes to Africa was given the Air Corps, General Arnold found that neither military nor civilian crews with the necessary experience were immediately available. The few experienced Army crews could not be spared; and the country had long since been combed for civilian pilots and navigators for the North Atlantic ferrying service.³⁰ Rather than ship the planes by water, the ferrying job was turned over to Pan American Airways,³¹ whose experience in the development of commercial airlines through Latin America already had been turned to advantage in the effort to extend and strengthen hemisphere defenses.³² As early as November 1940, Pan American had been made the agent of the United States government in carrying out the so-called Airport Development Program (ADP) for the construction and improvement of airports on foreign territory throughout the Caribbean area, Central America, and Brazil, as well as in Liberia. Panair do Brasil, a Pan American subsidiary, had undertaken at Belem and Natal the development with ADP funds of facilities destined to serve as major ferrying and transport bases along the South Atlantic route. Other bases that would be used principally for defensive purposes, but which provided emergency landing fields for transient aircraft, were constructed through Pan American agencies in Cuba, Haiti, the Dominican Republic, and Venezuela.³³ On 29 May 1941, an agreement between Atlantic Airways, Ltd., and the British government was drawn up for delivery of the twenty transports.³⁴ The British agreed to meet all expenses and to furnish the navigators. Atlantic Airways obtained the pilots from several sources, principally from the Lockheed Company on a loan basis. A sufficient number were found to ferry the planes to Africa in flights of ten or less.³⁵

On the night of 21 June 1941 the first flight of ten transports took off from Miami, Florida, bound for Port of Spain, Trinidad. The next stop was at Belem, Brazil. Here the crews were arrested and held

for three days. Although the Brazilian government had readily granted consent for the planes to cross its territory, it was with the understanding that they show American registry. Ownership of the planes had been transferred to the British government at Miami, at the request of Atlantic Airways. Brazil, a neutral, had no desire to compromise her neutrality; and, as a result of the incident, transfer of ownership of the remaining planes was delayed until they reached Africa. From Belem, the ten transports proceeded to Natal and thence across the Atlantic to Bathurst. All made the overwater crossing safely. The crews took the planes as far as Lagos before returning to the United States.³⁶ Seven of the remaining ten planes left Miami in late July and were delivered on the 30th.³⁷ The last three of the twenty were delivered in September, completing successfully and without loss the first ferrying operation from the United States to Africa.³⁸

While the movement of the first flight of ferried aircraft over the southeastern route was still under way, steps were taken by the American and British governments to establish a contract ferrying service to the Middle East on a more permanent basis. The two governments turned logically to Pan American Airways. Preliminary plans were drawn up at a conference in General Arnold's office on 26 June 1941, with representatives of the British Air Commission and the Pan American organization in attendance.³⁹ At that time, it was expected that some 400 Glenn Martin medium bombers of the Baltimore type, purchased by the British prior to the passage of the Lend-Lease Act, would be ready within a few months to start moving from the factory to the Middle East front and that these would be followed by a steadily increasing flow of lend-lease aircraft.⁴⁰ Agreements reached at the June conference provided that Pan American would establish both a ferrying service and an air transport service to the west coast of Africa, and would also take over the British ferrying and transport operations across central Africa from Takoradi to Khartoum.⁴¹ The United States assumed the obligation of financing the contract services. An estimated total of \$20,588,528 was required, of which \$17,788,528 could be charged to lend-lease. The remainder was allocated from the emergency fund provided by the executive offices appropriation act of 5 April 1941.⁴²

Three subsidiary corporations were organized by Pan American Airways, Inc., the parent organization, in order to carry out the

agreements reached. Pan American Air Ferries, Inc., was set up to operate the ferrying service all the way from Miami to Khartoum in the Anglo-Egyptian Sudan. The Pan American Airways Co. came into being to establish a flying boat transport service from the United States to West Africa. Pan American Airways-Africa, Ltd., was organized to take over the existing British trans-African transport service.⁴³ On 12 August 1941 five contracts were signed by representatives of Pan American and its subsidiaries, the United States government, and the British government. Three of the contracts, those between the United States and units of the Pan American organization, provided for the ferrying and transport services.⁴⁴ The British signed agreements with Pan American Airways-Africa and Pan American Air Ferries, by which full operational rights were assured along the trans-Africa route.⁴⁵

In considering the Pan American agreements, it should be borne in mind that the United States and Britain were interested primarily in the ferrying service. The transport services were of secondary importance and existed primarily for support of the ferrying operation. Thus, when the President announced publicly on 18 August 1941 that the agreements with Pan American had been concluded, stress was placed on the importance of speeding delivery of aircraft to the British. The transport services, the President stated, were to "supplement the ferry system by returning ferry personnel and carrying spare plane parts and items essential to effective delivery of aircraft to the Middle East."⁴⁶ Not until after the United States entered the war, and acquired thereby heavy military commitments of its own that went far beyond the prewar lend-lease obligations, did the South Atlantic transport service assume outstanding importance as a support to combat operations. At its inception, it was considered merely an adjunct to ferrying.

Before Pan American Air Ferries (PAAF) could begin operations on an extensive scale, a greatly enlarged organization had to be developed from the limited personnel and meager facilities inherited from Atlantic Airways. For the first four or five months, the efforts of the company were expended principally in setting up a training program at Miami. Some former commercial and airline pilots were recruited, but for the most part the trainees were recent graduates of the civilian pilot training program, who had at best several hundred hours of flying time. Because of the shortage or nonexistence of air-

plane mechanics in the labor market, the company found it necessary also to set up organized courses of instruction in all types of airplane maintenance and mechanical work.⁴⁷

Pan American Air Ferries actually delivered only a dozen aircraft prior to Pearl Harbor, and all of these were transports for use on the trans-African run.⁴⁸ After the United States entered the war, deliveries by PAAF pilots increased month by month. By the time the personnel and facilities of the organization were militarized at the end of 1942, some 464 planes had been delivered over the South Atlantic to the Middle East and the Far East by PAAF crews.⁴⁹

In order to establish the flying boat service to West Africa, the United States purchased for the sum of \$900,000 one of Pan American's famous four-engine Clippers, a Boeing B-314A withdrawn from the Pacific. It was then leased to the contractor for the nominal fee of one dollar.⁵⁰ The plane accommodated a crew of eleven and sixty-eight day passengers or thirty-six sleeping passengers, with mail and cargo holds having a total capacity of approximately five tons.⁵¹ Only one trip over the route, a survey flight, was made before 7 December.⁵² Soon after the United States entered the war, the Clipper fleet was increased and a regular service was established over the route: Miami-San Juan (Puerto Rico)-Port of Spain (Trinidad)-Belem-Natal-Fisherman's Lake (Liberia)-Lagos (Nigeria), with occasional trips as far as Leopoldville (Belgian Congo).⁵³

Perhaps the most important link in the whole system of Pan American ferrying and transport services was the operation across central Africa. In providing a transport service and in maintaining the bases, Pan American Airways-Africa supported the movement across the continent of aircraft arriving from both the United States and Great Britain. Terminal points were established by terms of the contract at Bathurst on the west coast and at Khartoum in eastern Africa, but after 7 December the service was extended to Cairo and beyond.⁵⁴ Before operations could begin, Pan American was faced with the problem of assembling in the United States an administrative staff, employing some hundreds of technicians, recruiting and training the pilots, and transporting all of these, together with tons of material, a third of the way around the world to Africa. The headquarters was established at the main base at Accra on 8 October 1941. This step was followed by the gradual taking over of other bases on the route during October, November, and December as additional personnel

arrived to staff them. On 21 October, a DC-3 took off on the first scheduled flight from Accra to Khartoum; and by the end of that month, seven aircraft and thirty pilots were maintaining regular scheduled operations.⁵⁵

Plans formulated during the summer of 1941 for the opening of the South Atlantic route to the Middle East went no further than the establishment of the contract services. But in the fall of that year a significant development of policy brought about the inauguration of a military ferrying service and a military transport service, for which in both instances the Ferrying Command assumed responsibility. As the Germans in 1941 turned from the west to the east, going to the assistance of the Italians in Africa, driving victoriously through the Balkans into Greece and Crete, and hurling the main weight of their military might against the Russians during the summer, support of the British position in the Middle East had come to be a main concern of those charged with administration of America's lend-lease policy. Not only was it there that the British were now hardest pressed, but the extension of lend-lease aid to the Soviet Union following the German attack in June had given new significance to the defense of all that general area which controlled approaches to a line of supply leading up from the Persian Gulf through Iran to Russia. A North African military mission under Brig. Gen. Russell H. Maxwell had been established at Cairo on 13 September 1941, with responsibilities similar to those of the special observers in London;* and, as plans were laid for an increasing flow of American air materiel to the Middle East, attention was directed to ways and means by which assistance could be rendered in meeting special problems of maintenance and supply for U.S.-built aircraft.⁵⁶

A military air transport service over the South Atlantic, linking Washington with Cairo, was opened on 14 November 1941. As early as July of that year, when the North Atlantic shuttle service started, the Ferrying Command had begun looking ahead for an alternate route to which operations could be shifted with the approach of winter. At that time, no serious consideration was given to opening a service to Cairo. The immediate need was to find a more southerly, all-weather route into the British Isles in order to maintain the air connection with London and, even more important, to enable the British to continue during the winter the uninterrupted movement of

* See above, p. 109, and below, pp. 577-79.

bombers from North America to the home base.⁵⁷ A glance at the map will show that the shortest and best possible alternate routes crossed the middle Atlantic by way of Bermuda and the Azores or direct from Newfoundland to the Azores, and thence northeast to the United Kingdom. Use of the Azores depended on the consent of Portugal, and negotiations were opened with that country for the establishment of an airdrome on one of the islands in the group, to be manned by a security force of American air and ground troops. No definite answer had been received from the Portuguese government when the North Atlantic shuttle service was suspended on 18 October 1941. Upon the request of the Ferrying Command, the State Department again pressed for an answer, but Portugal was unwilling to jeopardize its neutrality.⁵⁸

Blocked for the time being in the effort to establish a transport service across the middle Atlantic to Britain, the Air Corps turned its attention in October and November 1941 to the opening of a service to Cairo over the South Atlantic route. Two survey flights were made over the route in Ferrying Command B-24's in September and early October. The first of these, which served also to carry Maj. Gen. George H. Brett, Chief of the Air Corps, on a special mission to the Middle East, left Bolling Field on 31 August for Cairo and proceeded as far as Basra at the head of the Persian Gulf before returning to Washington on 7 October. Lt. Col. Caleb V. Haynes served as pilot and Maj. Curtis E. LeMay as co-pilot on this pioneer 26,000-mile trip, the first flight over the whole of the South Atlantic route from the United States to the Middle East and return.⁵⁹ Shortly thereafter, Lieutenant Reichers traversed approximately the same route from east to west on his flight home from Moscow.*⁶⁰

The decision to open a regular transport service came early in November, following a request for the transportation of personnel and equipment to Cairo to organize the air section of the U.S. North African Military Mission.⁶¹ Formal orders to open a regular service were given to the Ferrying Command, and on 14 November the first B-24 left Bolling Field. Lt. Edson E. Kester was at the controls, with Capt. Lawrence M. Thomas acting as co-pilot. Brig. Gen. Elmer E. Adler, newly appointed chief of the air section of the mission, headed the passenger list.⁶² Four other transports departed

* See above, p. 318.

Washington for Cairo prior to 7 December, each carrying important military or diplomatic personnel as well as high-priority cargo and mail.⁶³ The service continued on a special-mission basis during the critical early months of war, pending the establishment of a greatly expanded and more regularly scheduled contract carrier operation over the route.

In the course of his mission to the Middle East in September, General Brett reached the conclusion that the long-range B-24 bomber would provide an effective and quick means of attacking the Germans in southern Europe and of taking definite offensive action against the Axis forces in North Africa.⁶⁴ Having proceeded from Cairo to London,* he found the British receptive to a suggestion that twenty B-24's be diverted from a scheduled delivery for service in the United Kingdom to the Middle East. It was decided that the number of planes should be reduced to sixteen (the initial equipment of one squadron), that provision would have to be made for training the British crews in the Middle East, and that a stock of spare parts and supplies should be sent out from the United States. Tentative agreements reached in London were conveyed on 17 October to General Arnold, who gave his approval.⁶⁵

The task of making the preliminary arrangements and delivering the sixteen Liberators devolved upon the Ferrying Command.⁶⁶ Heretofore, Ferrying Command deliveries had been to "the point of ultimate take-off" within the Western Hemisphere. These were to be the first deliveries beyond the continent by military crews of the Ferrying Command and the first combat aircraft to be sent over the southeastern route to Africa. There was no alternative to the use of military crews. Pan American Air Ferries' pilots were trained for the ferrying of two-engine aircraft, not four-engine. Military crews became available by the coincidence that on 18 October the Ferrying Command's B-24 shuttle service over the North Atlantic to Great Britain was suspended, temporarily it was believed at the time, pending winterization of the aircraft and the improvement of weather and communications facilities.⁶⁷

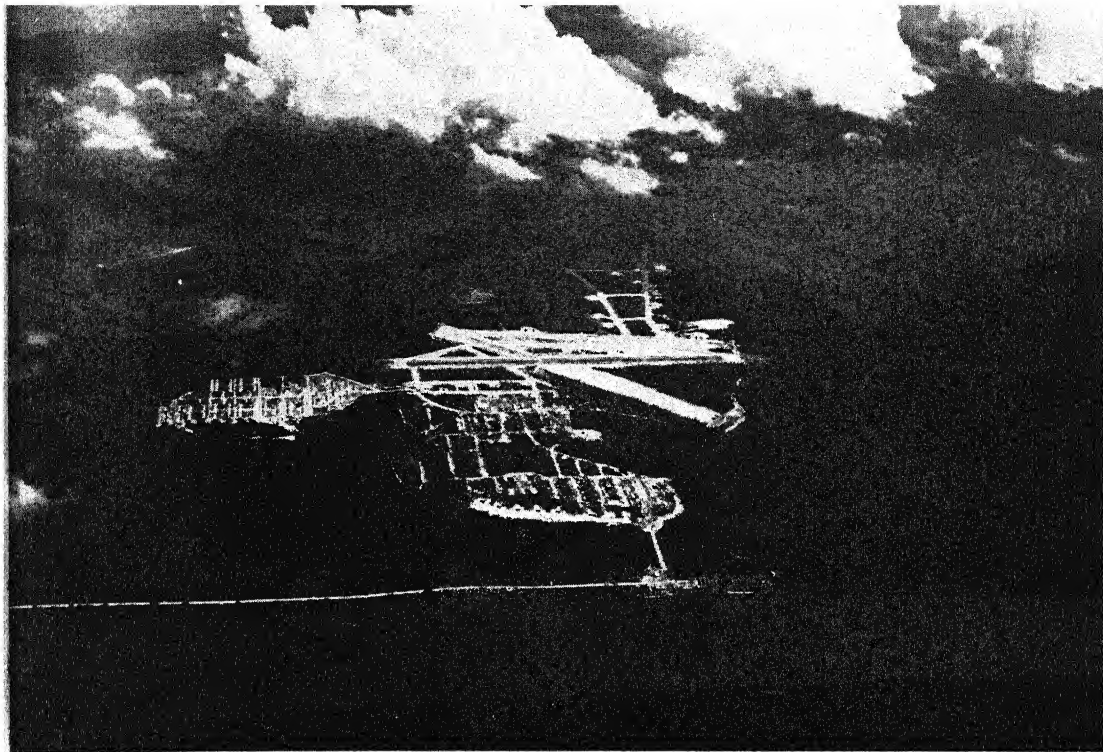
Before ferrying by military crews to Africa could begin, it became necessary to secure an amendment to the presidential directive of 3 October 1941, under which the Ferrying Command was then operat-

* For a discussion of his activities there, see below, pp. 634-35.

ing. This directive authorized the command to make deliveries only to "any territory subject to the jurisdiction of the United States, to any territory within the Western Hemisphere, the Netherlands East Indies and Australia."⁶⁸ Authority to extend the ferrying service was obtained on 29 October. In a letter to the Secretary of War on that date, the President authorized the delivery of aircraft "to any point within the African continent."⁶⁹ On 24 November the President issued a "blank check" directive authorizing extension of deliveries "to such other places and in such manner as may be necessary to carry out the Lend-Lease program," an enlargement of authority which could be made greater by nothing short of war.⁷⁰

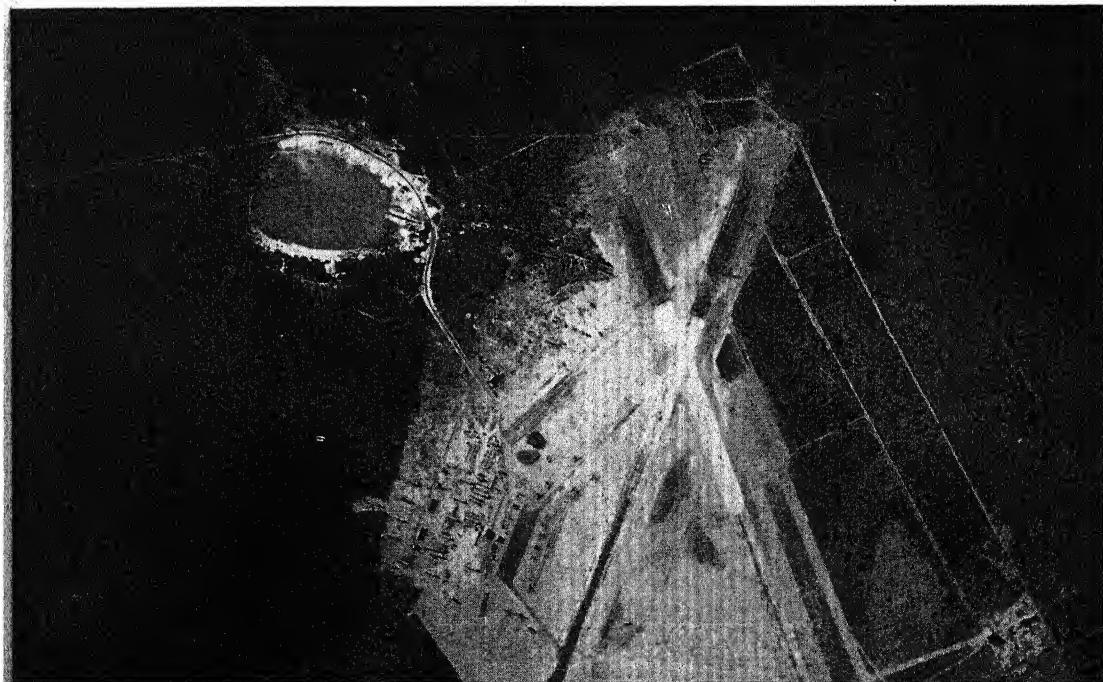
More than a month of preparation had been required before the Liberators were ready to start moving, one at a time, from the United States. With Lt. Elbert D. Reynolds, an experienced trans-Atlantic flyer, acting as pilot, the first of the bombers departed Bolling Field for Cairo on 20 November. Unfortunately, on the trip across Africa the navigator lost his way and, after failing to locate El Fasher, Reynolds was forced to make a night landing at El Obeid. The heavy bomber landed on a shoulder of the runway and was wrecked beyond repair, although the crew was saved.⁷¹ Four other aircraft of the sixteen-Liberator project departed the United States prior to 7 December, and all four were delivered safely in Cairo.⁷² But on America's entry into war, the remainder were turned back at Miami or intermediate domestic stations to become part of a yet-more-urgent movement of heavy bombers to the Far East for the relief of the Philippines.

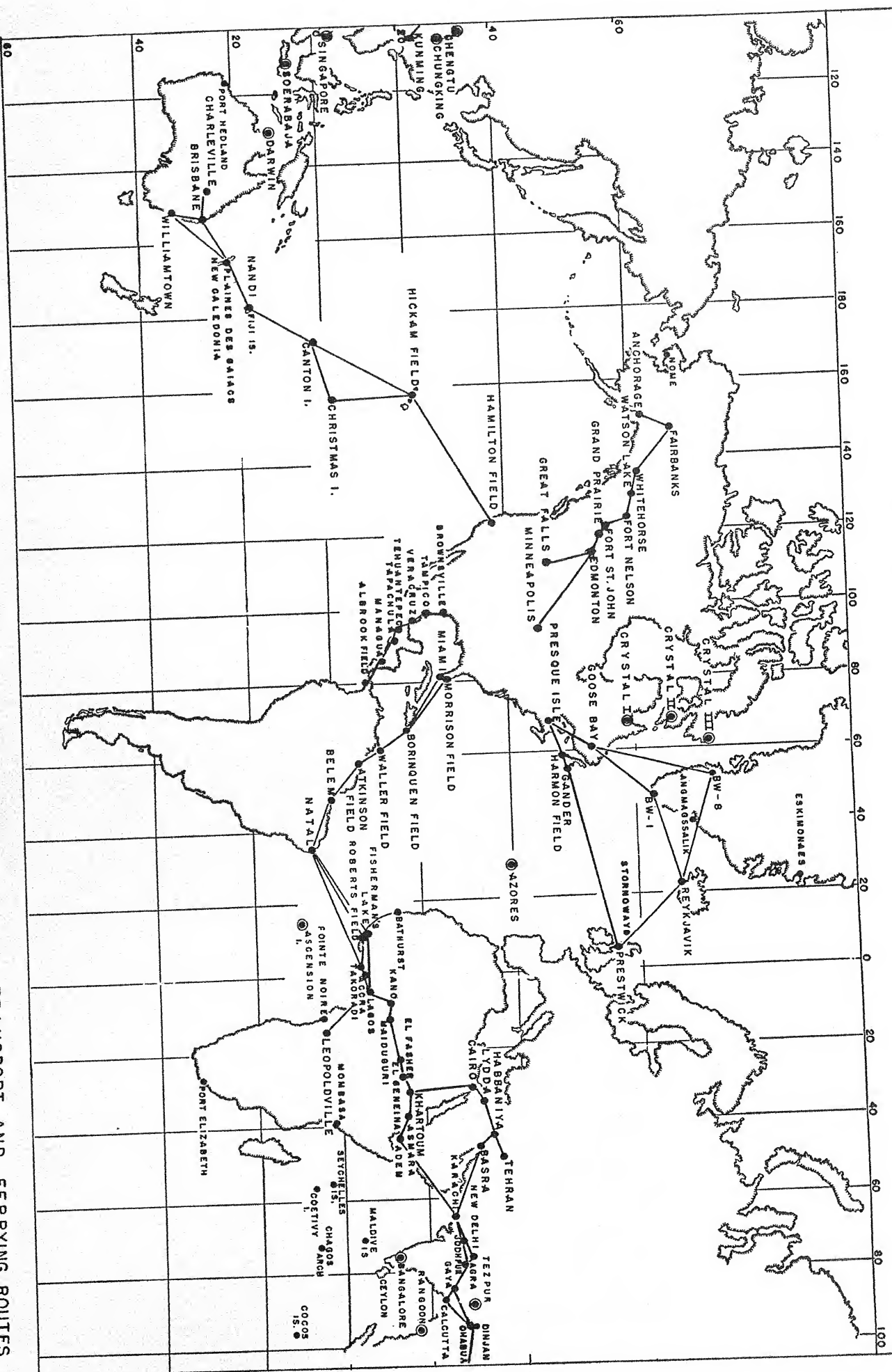
Measures taken by the United States in the immediate prewar period for development of the South Atlantic route proved to be more important as preparation for the impending war than for the ferrying and transport work actually accomplished. Only a handful of planes, ferried and transport, moved over the route prior to Pearl Harbor. But thanks to the work of the Air Corps Ferrying Command and the Pan American organization, and to the courage and resourcefulness of the pioneer crews who flew the route, the United States had made a substantial start toward the development of a vital line of communications when, after 7 December, aircraft and supplies for its own forces joined the increasing flow of lend-lease goods to the Middle East, to India, China, and the Southwest Pacific.



ATKINSON FIELD, BRITISH GUIANA, JUNE 1942

PARNAMIRIM FIELD, NATAL, BRAZIL, JUNE





PRINCIPAL FOREIGN TRANSPORT AND FERRYING ROUTES
ARMY AIR FORCES - 30 JUNE 1942
FANITA

Life Line to the Middle and Far East

Ferried aircraft departing from southern Florida bases for flight over the southeastern route stopped first either at Borinquen Field, Puerto Rico, or at one of the bases on the island of Trinidad. Piarco Field on Trinidad, a Pan American base, was used for some months after Pearl Harbor or until Waller Field, a purely military installation, was opened for traffic in February 1942. The Waller Field site had been secured from the British in the destroyer-base lease agreement, as was the site for Atkinson Field in British Guiana, the next major staging base to the south. From Waller Field or Atkinson Field aircraft were usually ferried to the base at Belem in northern Brazil and thence to Natal on the Brazilian bulge, although some use was made of alternate landing fields along the way. The two bases at Belem and Natal, built with airport development program funds by the Pan American organization, were opened for traffic shortly after Pearl Harbor. Prior to the opening of the base on Ascension Island in July 1942, nearly all two-engine aircraft taking off from Natal for flight over the South Atlantic landed at either Hastings Field in Sierra Leone or Roberts Field in Liberia, each at a distance of approximately 1,900 statute miles from Natal. Four-engine aircraft were able to fly direct to Accra, but many stopped first at Hastings or Roberts fields for refueling. From Accra aircraft moved in easy stages across the central African route to Khartoum, and here the route divided. India-bound planes were sent either across southern Arabia by way of Aden to Karachi or up through Cairo, Habbaniya, and Basra to the Karachi gateway. Lend-lease planes for Russia were flown through Cairo to Basra or to Tehran, where they were turned over to Soviet flyers. Aircraft bound for China crossed central India to Dinjan in Assam and were flown over the Himalayas to Kunming.⁷³

A month or more before the United States entered the war and in anticipation of an increasing flow of lend-lease aircraft to the Middle East, the Ferrying Command had taken steps to place its own control officers at key bases on the southeastern route as far as Cairo. None of these had reached his post prior to 7 December, but with the coming of the war and the selection of the route for the ferrying of heavy bombers to the Far East, the procurement and assignment of these officers, as well as weather and communications officers and enlisted specialists, was speeded up. The control officers became responsible

for dispatching all United States military aircraft, transmitting arrival and departure reports, providing for fueling and maintenance facilities, making arrangements for feeding and lodging transient crews and passengers, collecting and forwarding intelligence on route conditions, and exercising general administrative control over transient aircraft and crews. Considerable difficulty was experienced at first in securing competent officers to send out. Regular Army and experienced Reserve officers were more urgently needed in combat units or in the AAF training program. For a time, the Ferrying Command was forced to use young weather or communications officers, only recently commissioned, as control officers at such important bases as Trinidad, Belem, Natal, Accra, and Karachi. These were gradually replaced by more experienced officers with higher rank who were better able to handle the multitude of problems that came with the great increase in traffic and to control rapidly expanding base organizations.⁷⁴

While that segment of the southeastern route from Florida through Brazil was reasonably secure from attack, operations across Africa during most of 1942 were forced to proceed in the face of an ever-present threat of enemy interference. Most of the bases along the west coast of Africa and across central Africa were within easy bombing range of Vichy French territory. More threatening were Rommel's forces in North Africa, for the very existence of the air connection with southern Russia, India, and China depended on the holding of the Middle East crossroads. Should the Germans and Italians have driven the British from Egypt and the Near East, the high strategic value of the southeastern route as it then existed would have been immediately destroyed and the whole line, hinging on Natal, would have been forcibly swung back far to the south.⁷⁵ With this possibility in mind, the War Department early in 1942 directed the survey of an alternate bomber route across Africa and the Indian Ocean to Australia along a line roughly parallel to, and a few degrees south of, the equator. The most feasible route was determined to be from Natal to Ascension Island to Pointe Noire in French Equatorial Africa, and thence by way of bases in the Belgian Congo and Tanganyika to Mombasa in Kenya Colony, the point of take-off from the east coast of Africa. Flight across the Indian Ocean was to be made by way of island steppingstones in the Seychelles group or on Coetivy Island, the Chagos Archipelago, and the Cocos Islands to Port Hedland,

Australia. Another Indian Ocean route was proposed that would have connected Mombasa with Ceylon or Bangalore, India, by way of Coetivy Island, the Chagos Archipelago, and the Maldiv Islands.⁷⁶

A survey of the route across Africa was made by a board headed by Lt. Col. Neil B. Harding.⁷⁷ Early in March, Maj. Harold B. Willis of the Air Corps and Lt. Col. Herman B. Pohl of the Corps of Engineers began a joint survey of the Indian Ocean route, making use of a Pan American Clipper for the purpose. Before the Clipper had left the east African base at Mombasa, however, word was received from General Brett in Australia that Japanese operations in the area of the Cocos Islands made the route to Australia no longer practicable. Willis and Pohl were given orders to proceed no farther than the Chagos Islands.⁷⁸ There still seemed a possibility that an alternate air supply line to India might be found, but fortunately the preferable Middle East land route was held and continued in use throughout the war. Nor was it found necessary, as had been considered, to divert all waterborne fighter aircraft to Port Elizabeth in the Union of South Africa for ferrying up the old Cape-to-Cairo airway. Although more exposed to attack, Takoradi and Accra in the Gold Coast Colony continued to be the assembly points for fighter and lighter types of aircraft shipped to Africa by water.⁷⁹

Until February 1942, when the Japanese captured Singapore and overran the East Indies, the southeastern route served as the principal line of air communications between the United States and the Southwest Pacific area. This was, indeed, its most immediate importance. In the first days of the war the Japanese had cut the central Pacific route from Hawaii through Midway and Wake to New Guinea and Australia—the route over which the Far East Air Force had received its thirty-five heavy bombers in the fall of 1941. Considerable progress had been made by 7 December in the construction of bases for an alternate, more southerly route from Hawaii to Australia through Canton Island, the Fijis, and New Caledonia.⁸⁰ But this route was not ready when orders were issued shortly after Pearl Harbor to rush eighty heavy bombers and crews as soon as they became available to the Far East for the relief of the Philippines.* The only other route that could possibly be used was that by way of the South Atlantic and across Africa and southern Asia.⁸¹ Even though it had the marked disadvantage of stretching approximately two-thirds of the distance

* See above, pp. 179-81, 192-93, 223.

around the globe, there was no alternative to sending the bombers that way if the President's orders to begin immediately the air reinforcement of the Philippines were to be carried out.⁸²

Project X, as the heavy bomber movement to the Far East was designated, became the first major foreign ferrying job of the war and the first overseas movement of tactical units in which the Ferrying Command had a part. Not until the air echelon of the Eighth Air Force began its movement to Britain in June 1942 would the Army Air Forces face an overseas ferrying job of greater size and complexity. Although a total of eighty four-engine bombers were originally earmarked for the project, something less than that number actually left the United States and an even smaller number reached the Far East. Original orders directed all flights to proceed first to MacDill Field near Tampa, Florida, for final staging prior to take-off from the United States;⁸³ but a few bombers were diverted to Hamilton Field, California, and were dispatched over the new South Pacific route which was opened for traffic on a small scale after mid-January 1942.⁸⁴

Project X comprised two separate echelons of heavy bombers. The first of these to be ordered to the MacDill Field staging point was made up of fifteen LB-30's * repossessed from the British and manned by crews of the 7th Bombardment Group, a group whose air movement across the Pacific had begun on 6 December.[†] Only six of these planes, under the command of Maj. Austin A. Straubel, actually went through MacDill Field, the others being ultimately diverted to the Pacific route. Travel orders were issued on 19 December 1941, and within a few days aircraft and crews began to arrive at Tampa to prepare for the long overseas flight.⁸⁵ The second and more important component was made up of a projected sixty-five B-17 bombers and crews. Most of the B-17's were yet to come from the factory and were to move out in small groups as they became available and after they had gone to the Sacramento Air Depot to be put in combat readiness. Orders were issued on 23 December for the transfer of the sixty-five bombers to the Philippines.⁸⁶ Crews of both groups of bombers were ordered to proceed along the route: Tampa-Trinidad-Belem-Natal-Accra-Khartoum-Cairo-Habbaniya-Karachi. At Karachi the LB-30's under Straubel's command were to come under the con-

* An export model of the B-24, modified for British use.

† See above, pp. 193, 199-200.

trol of the commanding general of the U.S. Army Forces in the Far East. Karachi was the gateway to India through which all transient aircraft going farther than the Middle East had to pass. Here the Ferrying Command placed a control officer early in January 1942 just as the first of the heavy bombers were moving through on the way to the Far East.⁸⁷ The flight commanders of the second group of bombers, the B-17's, were ordered to proceed as far as Bangalore in southern India, at which point they were to report by secret means to General MacArthur and await further orders. When it became apparent by early January that the delivery of the heavy bombers as far as the Philippines was a hopeless undertaking, amended orders were issued naming Australia, rather than the Philippines, as the destination.⁸⁸ All flights were then directed to report upon arrival at Bangalore to General Brett at Darwin, Australia, and await orders. Lt. Col. Edward H. Alexander, then in China, was sent to Bangalore to act as Ferrying Command control officer.⁸⁹

Although the staging of the heavy bombers and crews at MacDill Field came under the control of the Third Air Force, the Ferrying Command was given certain responsibilities in connection with the final processing at Tampa. In late December the command sent Lt. Louis T. Reichers and another officer to MacDill Field to assist in loading the bombers for overseas flight in accordance with established weight and balance specifications. Upon arriving at the field, Reichers found that the LB-30's then being processed were overloaded with all sorts of miscellaneous and excess equipment. He removed an average of over 3,000 pounds from each plane and made arrangements to ship such of this equipment as would be needed in the combat zone by the Pan American transport service. All planes were brought down below the absolute maximum weight allowed for safe flying. The planes were to be flown by their own combat crews, and Reichers naturally found many of the young officers and men making up the crews inexperienced, untrained in long-distance flight procedures, and jittery. As with most human beings facing the unknown, some were obviously in fear of the long flight over ocean, jungle, and desert. It was clear that additional training prior to take-off would be needed if a high accident rate was to be avoided, but the pressure for speed in the movement of urgently needed reinforcements was such that permission to delay the take-off was granted only after an appeal to Washington.⁹⁰

In order to carry out its own assigned responsibilities in connection with the training, the Ferrying Command established a control office at MacDill Field in January in charge of Capt. James C. Jensen, a veteran four-engine pilot. He was assisted by specialists in the various crew positions, that is, pilots, co-pilots, navigators, radio operators, and flight engineers, all of whom had had trans-Atlantic flying experience with the B-24 shuttle services to Great Britain and Cairo. The first step was to establish a ferrying school for the Project X crews, with the Ferrying Command specialists and certain others serving as instructors. Instruction was given in navigation, radio, aircraft maintenance, gunnery, and four-engine transition, the latter including, because of the inexperience of the crews, some instruction in night landings and take-offs. Another important aspect of the training program was the briefing of the crews on weather, communications, landing fields, housing, messing, and health conditions along the route. The briefing of crews for overseas flight would develop into one of the more fundamental and specialized functions of ATC, but the procedures at this initial stage were rudimentary indeed by comparison with the system that was later set up at aerial ports of embarkation and at overseas stations around the world. In addition to the information that could be provided out of the personal experience of a few officers, the bomber crews were supplied with maps, charts, and other material on route conditions procured from a variety of sources by the Ferrying Command's intelligence section. According to officers connected with the project, some 170 maps and charts and approximately 50 books and folders, comprising a mass of undigested, unwieldy information which served to confuse rather than inform, were furnished each crew. Later, as the briefing technique improved, route information was boiled down to the essentials and compressed into well-organized route guides.⁹¹

Training and briefing the crews and putting the aircraft in shape for the overseas journey were only the first steps in the complex task of moving Project X to the Far East. The most difficult part of the job began after the bombers were on their way. It would have been less difficult had more time been allowed for training prior to departure, but some compromise had to be made between the urgent need for the planes in the Pacific and the unpreparedness of the crews. The majority of the pilots had been trained on single-engine or twin-engine aircraft and because of the inadequate number of planes had

at best only fifteen to twenty hours of four-engine flying time before leaving Tampa. In addition to, and partly because of, the inexperience of crews, special problems of morale and discipline developed.⁹² Control officers stationed along the route, often themselves new and inexperienced in their tasks, at times felt the lack of that kind of authority which belongs only to a recognized and well-established position. Equally serious were shortages of gas and oil, primitive refueling and maintenance facilities, and an inadequate weather and communications network. The single problem of providing a sufficient supply of gas and oil at refueling points was staggering in itself. An estimated 500,000 to 1,000,000 gallons of 100-octane gasoline with proportionate amounts of lubricating oil were required at each of a dozen control points. Nearly all of this had to come by tanker from the United States. Although a 100-octane refinery existed at Abadan in the Middle East, an estimated 90 per cent of its production was required by the RAF to meet current operational commitments. The gasoline had to be shipped and stored in bulk and this required that the shipment of materials for tank construction precede that of the gasoline itself.⁹³

The speed with which the Project X movement was undertaken made it impossible for the Ferrying Command to build up in time a supply of spare parts at intermediate bases, and this one factor was probably more responsible than any other for the numerous delays en route. Except for the few spares carried by each airplane and some Liberator parts stocked by the RAF at Cairo, all spare parts had to be shipped from the United States. Cannibalization enabled some of the grounded planes to continue on their way, but those that had been robbed and those suffering major damage had to wait for the parts to be moved out by air, when possible, or by water. The small amount of air cargo space available at the time, the priority given to high-ranking military personnel traveling by air, and the almost total lack of transport planes capable of carrying complete engine assemblies made the movement of supplies by air more than difficult. Some spares were shipped to West Africa by water and then distributed to points in Africa and India by Pan American planes. The shortage of maintenance crews at most points forced the combat crews to do their own maintenance work after long and fatiguing flights. Some help was given by a Ferrying Command trouble-shooting crew sent along the route in February to make such special or major repairs as were be-

yond the capabilities of the combat crews or the local Pan American maintenance personnel.⁹⁴

The staging of Project X aircraft and crews at MacDill Field extended over a period of about two months. During that time some fifty-eight heavy bombers of the projected eighty departed for the Far East over the southeastern route, while eight went out over the South Pacific route. In spite of many delays along the way, forty-four of the sixty-six bombers were delivered to the Southwest Pacific area over both routes by late February. Others were diverted to the Tenth Air Force in India after the route from India to Australia was closed; some had served as a source of spare parts to put the others through. Four of the B-17's were lost completely either in crashes or over the Atlantic, another landed in a swamp at Belem, one was forced to return to the United States for repairs, and one was delayed in Africa awaiting repairs even as late as May 1942.⁹⁵ Although none of the bombers reached the Philippines, most of them were put to use in Australia or on other fronts. It was a good record considering the pioneer nature of the job, the inexperienced and poorly trained crews, and the necessity for building a ferrying route organization through the South Atlantic and across Africa and India while the movement was in progress. In assuming the major share of responsibility for controlling the movement, the Ferrying Command had gained much valuable experience that would prove useful as the ferrying job increased in scope with the growing intensity of the war in Europe and in the Pacific.

After February 1942 all aircraft flight-delivered to the Southwest Pacific were staged at West Coast bases and flown out by way of Hawaii and the chain of island steppingstones extending down to Australia. The number of planes delivered for a time was small, but steady progress was made in the construction or improvement of bases and in the installation of weather and communications facilities in preparation for the heavier movements that would come in the summer and fall.⁹⁶ Ferrying Command personnel made some of the deliveries, and in April two LB-30's were assigned to the route for the return of ferry crews to the United States. But the Ferrying Command, of which Col. Harold L. George assumed command that same month, continued to be concerned primarily with the problems of the Atlantic air routes. Only gradually would it develop into a truly world-wide and uniform air transport system.

With the cutting of the India-Australia air link and the consequent

shift to the Pacific route of heavy bomber ferrying to the Southwest Pacific area, the Ferrying Command control office at MacDill Field was discontinued. Meanwhile, in January the command had been assigned jurisdiction over Morrison Field near West Palm Beach, Florida, for future use as the aerial port of embarkation for ferried aircraft departing over the southeastern route. A subheadquarters of the command, known as the South Atlantic Sector, was established at the field and an experienced Ferrying Command officer, Col. Paul E. Burrows, was appointed commanding officer of both the sector and the air base. In order to concentrate all ferrying activities at the one base, the 313th Materiel Squadron and certain key officers were transferred from Miami, where a small control office had existed since November 1941. Thereafter, Miami served principally as the base for air cargo operations of the contract carriers. At Morrison Field the 313th Squadron performed 1st and 2d echelon maintenance, while heavy maintenance work of 3d and 4th echelon became the responsibility of the subdepot established at the field by the Air Service Command in late February. Aircraft maintenance was the most important aspect of the staging job at this time, for the success of a flight depended largely on the mechanical condition of the airplane on take-off. And it would be some time before maintenance facilities at bases along the foreign routes compared favorably with those at ports of embarkation within the United States.⁹⁷

When lend-lease shipments were temporarily suspended immediately following Pearl Harbor, doubt existed in the minds of some as to whether the United States, concerned primarily with its own requirements, would continue to give logistical support to those nations that had now become allies. Would the needs of American armed forces preclude the further shipment of aircraft and other supplies to Britain, Russia, China, and the smaller nations at war with the Axis? An answer to this question was given by the President on 12 December in a report to Congress on lend-lease, in which he laid down the principle that "we must use the weapons from the arsenal of the democracies where they can be employed most effectively."⁹⁸ This decision, to distribute arms in accordance with strategic needs, had formed the basis for the diversion of heavy bombers originally consigned to the British in the Middle East to American forces in the Southwest Pacific; it also assured continued support in the form of twin-engine bombers, fighters, and transport aircraft to British im-

perial forces in Africa and India, as well as to the Russians and Chinese. The United States undertook not only to deliver these aircraft to such transfer points as were agreed upon but also to provide stocks of spare parts, certain forms of maintenance work, and such transition training as was required to familiarize Allied pilots with the operation of the planes.

Until late 1942, when all ferrying operations over the southeastern route were militarized, the great majority of lend-lease aircraft that were delivered overseas by air were flown to their destinations by civilian crews of Pan American Air Ferries. Although the Pan American Air Ferries contract had been drawn up in August 1941, deliveries did not exceed ten a month until February of the following year. The intervening time, however, had not been wasted. Throughout the fall and winter the organization had been busy recruiting and training flight and ground personnel in preparation for a greatly enlarged operation as soon as the aircraft began coming from the factories in quantity. As in the case of pre-Pearl Harbor deliveries, most of the aircraft ferried out by Pan American crews during the winter of 1941-42 were two-engine transports destined for the British or for Pan American Airways-Africa. An unusual assignment had been undertaken in December and January when four PBY flying boats, carrying loads of .50-cal. machine-gun ammunition, were ferried by way of the South Atlantic to the Dutch in the Far East.⁹⁹

Deliveries began to pick up in March with the arrival at the Florida staging point of the first numbers of a consignment of seventy-two lend-lease B-25's to the Russians.¹⁰⁰ Considerable work was required at Morrison Field in putting these two-engine bombers in shape for overseas flight. They were then turned over to Pan American Air Ferries crews who flew them first to the Pan American base at Miami for final flight checks and organization into flight echelons prior to take-off. For several months nearly all of the B-25's were flown from Miami to Africa and thence to British airfields near Basra, Iraq, where they were carefully inspected, flight-tested, and prepared for transfer to Soviet representatives. In June, because of the crowded condition of the air bases on the Persian Gulf, the majority of the planes were routed through Habbaniya direct to Tehran and were there taken over by the Russian pilots.¹⁰¹ Between March and the end of 1942, a total of 102 B-25's were flight-delivered to the Russians over the southeastern route. Though most of these were ferried by civilian

crews of Pan American Air Ferries, some were flown out by military crews.¹⁰² Lend-lease A-20's for the Russians began to arrive in the Persian Gulf area by water transport as early as January 1942,¹⁰³ but not until the following October were the first deliveries of these Douglas light attack bombers completed by air.*¹⁰⁴

Following the collapse of the Allied effort in Java, urgent demands for reinforcements came from Burma, China, and India, where the American Volunteer Group, the newly established Tenth Air Force, and the Chinese Air Force sought the means for a continued resistance to the Japanese. Fifty P-40E's had been allocated to the AVG in January, and during the same month thirty-three A-29 Hudsons had been earmarked under lend-lease for the Chinese.¹⁰⁵ From beginning to end, the A-29 movement was beset with trouble, vexatious delays, and untimely accidents. The aircraft were in poor mechanical condition when taken over by the ferrying crews and were overloaded with medical and other supplies for China before arriving at Morrison Field in late June for final staging. These factors, together with the relative inexperience of many of the crews, were responsible for an unusually high accident rate. Three planes were lost in crashes before the project left the United States, and six others were similarly lost in the course of the movement overseas. Because of Rommel's threat to Egypt that summer, the A-29's were held up in the Middle East for a time and might have been assigned permanently to General Brereton's forces there had not the persistent demands of the Chinese brought about their release. Of the thirty-three planes originally allocated, twenty-two were turned over to the Chinese Air Force during the summer and fall.¹⁰⁶

While it was impracticable to ferry fighter aircraft over the whole of the southeastern route, they were moved in large numbers under their own power over the land route from West African bases to the Middle East, India, and China. As early as 1940 the British had begun shipping fighters and two-engine bombers by water to Takoradi, where they were assembled and then ferried across Africa to Cairo. Within a few months after Pearl Harbor, the United States also began to make use of combined water and air supply lines in moving P-40's to the American Volunteer Group in China, to the Tenth Air Force in India, and during the summer of 1942 to American air units in the

* Seventy-one were delivered in October, sixty in November, and seven in December.

Middle East. Water shipment of the fifty P-40E Kittyhawks consigned to the American Volunteer Group began in February. Arrangements were made for use of the British assembly plant at Takoradi, where the planes were prepared for the overland movement. Losses were suffered en route, but by June most of the original fifty had crossed into China.¹⁰⁷ A larger movement of sixty-eight P-40E's for India and China began as the AVG deliveries were being completed. Comprising one element of a general reinforcement of the Tenth Air Force, the P-40's were flown to Quonset Point, Rhode Island, in late April and there aircraft and crews were loaded on the carrier *Ranger*. As the *Ranger* approached the west coast of Africa, the fighters were launched at distances of 125 to 25 miles from the landing field at Accra. Although only a few of the pilots had previously flown from the deck of a carrier, all took off safely and landed without mishap. But they were less fortunate in crossing central Africa. Two of the eight-plane convoys into which the P-40's were organized became lost over the African desert because of navigational errors. As a result, nine of the fighters cracked up. Other difficulties were encountered and numerous delays experienced; perhaps no more than fifty-eight of the planes eventually reached India.¹⁰⁸ Karachi had become, generally speaking, the terminal point for Ferrying Command operations to the East, and until December 1942 the responsibility for development of the trans-India service into China fell to the 1st Ferrying Group and thus came under the jurisdiction of the Tenth Air Force.*

Twin-engine transport planes were the only aircraft to be ferried to British forces in Africa during the first six months of 1942. In June, when Rommel's offensive reached its most threatening stage, the first tactical aircraft began to arrive. They were not in sufficient number to be of much help in stopping Rommel at El Alamein, but during the late summer and fall an increasing flow of twin-engine bombers departed from Florida to become a part of the great movement of supplies into Africa in preparation for Montgomery's offensive in October. Between June and the end of the year, 398 Lockheed and Martin medium bombers—including 120 B-34's, 153 A-28's, 45 B-26's, and 80 A-30's—were ferried to British forces in Africa by crews of Pan American Air Ferries or by American and British military crews.¹⁰⁹ At the same time, the forces gathering under the leadership of General

* See below, Chap. 14.

Brereton during the summer and fall, first as the United States Middle East Air Force and later as the Ninth Air Force, reached their battle stations in large part by use of the South Atlantic and trans-African ferry routes. The Middle East had been recognized originally as an area primarily of British responsibility, and the British indeed continued to carry the main burden there. But meanwhile the region had acquired such extraordinary strategic importance with reference to life lines upon which our own forces depended, not to mention plans for assistance to other hard pressed allies, that there was no choice but to send such help as could be provided to the British during the crucial contest with Rommel in the latter half of 1942. That help would be limited chiefly to assistance in the air, and it was made possible by the progress already achieved in the development of strategic air services by the southeastern route.

American air combat in the Middle East began in June 1942 with the arrival in that theater of the so-called Halverson Detachment under Col. Harry A. Halverson. HALPRO, as it was known in code, was a carefully chosen task force of twenty-three B-24D's and picked crews originally intended for service from Chinese bases in bombing operations against Japan.* When the detachment reached the Middle East it was held, temporarily it was believed at the time, for the purpose of carrying out a single mission against the Ploesti oil fields of Rumania on 12 June; but following Rommel's success in breaking through the British defenses at Cyrenaica, aircraft and crews were assigned permanently to General Brereton's newly created Middle East Air Force and were absorbed eventually by the Ninth Air Force. In helping to prepare HALPRO for overseas movement by air and in controlling the flight along the way, the Ferrying Command gave clear indication of having learned much about its job in the months that had passed since Project X moved over the southeastern route to the Far East. The HALPRO ferrying operation was handled smoothly and efficiently, without a single accident or loss and with very few delays of individual aircraft en route. Sufficient time was taken at the assembly point at Fort Myers, Florida, to train the crews and to put the aircraft in first-class mechanical shape. About two weeks before the detachment was ready to leave Fort Myers, Ferrying Command representatives from Morrison Field met with Colonel Halverson and his staff to work out in advance details for the staging

* See below, p. 493.

and movement of the project. This consultation proved advantageous, for when the aircraft reached Morrison Field very little time was lost in last-minute processing. The detachment was organized into three flight echelons of 7-8-8 aircraft, with flights spaced about two days apart in order not to overcrowd facilities along the route. A few of the aircraft were delayed briefly but caught up with their flights, and all three echelons arrived in the Middle East on schedule. Altogether, it was a highly successful operation and pointed the way to improved methods of handling mass flights of aircraft in the future.¹¹⁰

The North Atlantic Route

Through the winter and spring of 1942, as aircraft moved in increasing numbers over the South Atlantic to the Middle East and beyond, the upper Atlantic area was the scene of hurried and at times almost frantic preparation for an air movement that would permit the weight of American air power to be thrown against the Germans at the earliest possible moment. The American and British chiefs at the ARCADIA conference had reaffirmed their faith in a strategy which assigned priority to the European theater and gave to the AAF an initial mission to participate with the RAF in the bombardment of Germany. Questions remained regarding the timing and the scale of that effort, but there was no question as to the necessity for prompt action to prepare for the movement by air of AAF units to the British Isles. That preparation called primarily for a more adequate development of North Atlantic air routes.

The principal need was to complete facilities along a more northern route than that originally put into service by the Canadians and the British in 1940—one that would take full advantage of the stepping-stones provided by Newfoundland, Labrador, Greenland, and Iceland for the purpose of ferrying shorter-range planes to Europe. The British and Canadian governments had been the first to develop plans for such a far northern route¹¹¹ and had made initial surveys when the passage of the Lend-Lease Act early in 1941 lent new importance to the project and when, at the same time, plans for an eastward extension of hemispheric defenses by the United States and Canada gave to the undertaking still stronger support.*¹¹²

Original British-Canadian plans contemplated a route running from Gander Lake, Newfoundland, to a proposed base in southern Green-

* See above, Chap. 4.

land and thence to Iceland and to Britain.¹¹³ Such a route would have required the construction of only one base in addition to those already in use—the one in Greenland. But after the United States became an active participant in the undertaking, and when the Lend-Lease Act raised the prospect of a greatly increased volume of traffic, the project was altered and expanded. Several factors made the field at Gander Lake a very unsatisfactory staging point. Traffic moving through the base and directly across the Atlantic to Scotland was already heavier than could be well accommodated.¹¹⁴ The airport lay considerably to the east of a direct line of flight from embarkation points in Maine or eastern Canada to southern Greenland. Moreover, weather conditions in Newfoundland were much worse than in the mainland region of Labrador, which enjoyed a better location on the line of flight to Greenland.¹¹⁵ Accordingly, a site for development was selected at Goose Bay in Labrador; and Canada having undertaken the responsibility for construction of airdrome facilities, the work was begun there in September 1941. The first airplane landed on one of the temporary snow-packed runways two days after Pearl Harbor.¹¹⁶

The primary responsibility for development of needed facilities in Greenland fell to the United States under the terms of the Danish-American agreement of 9 April 1941.*¹¹⁷ Steps toward completing preliminary surveys had already been taken, and early in July of that year an advance task force of engineer, coast artillery, and general service troops arrived in the waters of southern Greenland and proceeded up the Tunugdliarfik Fjord to Narsarssuak, a site previously selected for the major staging base between Labrador and Iceland. Construction of a landing field and other base facilities began at once, and with the help of reinforcements that followed, continued on through the winter.¹¹⁸ The Narsarssuak base, which was given the code name of BLUE WEST 1 (BW-1), was ideally located about midway between Goose Bay and Reykjavik, Iceland, lying approximately 775 miles from each. These relatively short hops from the continent to Iceland and the one from Iceland to Scotland would make it possible to move even fighter aircraft along the route without too great difficulty.

Work on a second air base in Greenland, located farther north on the west coast just above the Arctic Circle and to be known as BLUE WEST 8 (BW-8), began in late September 1941.¹¹⁹ Plans

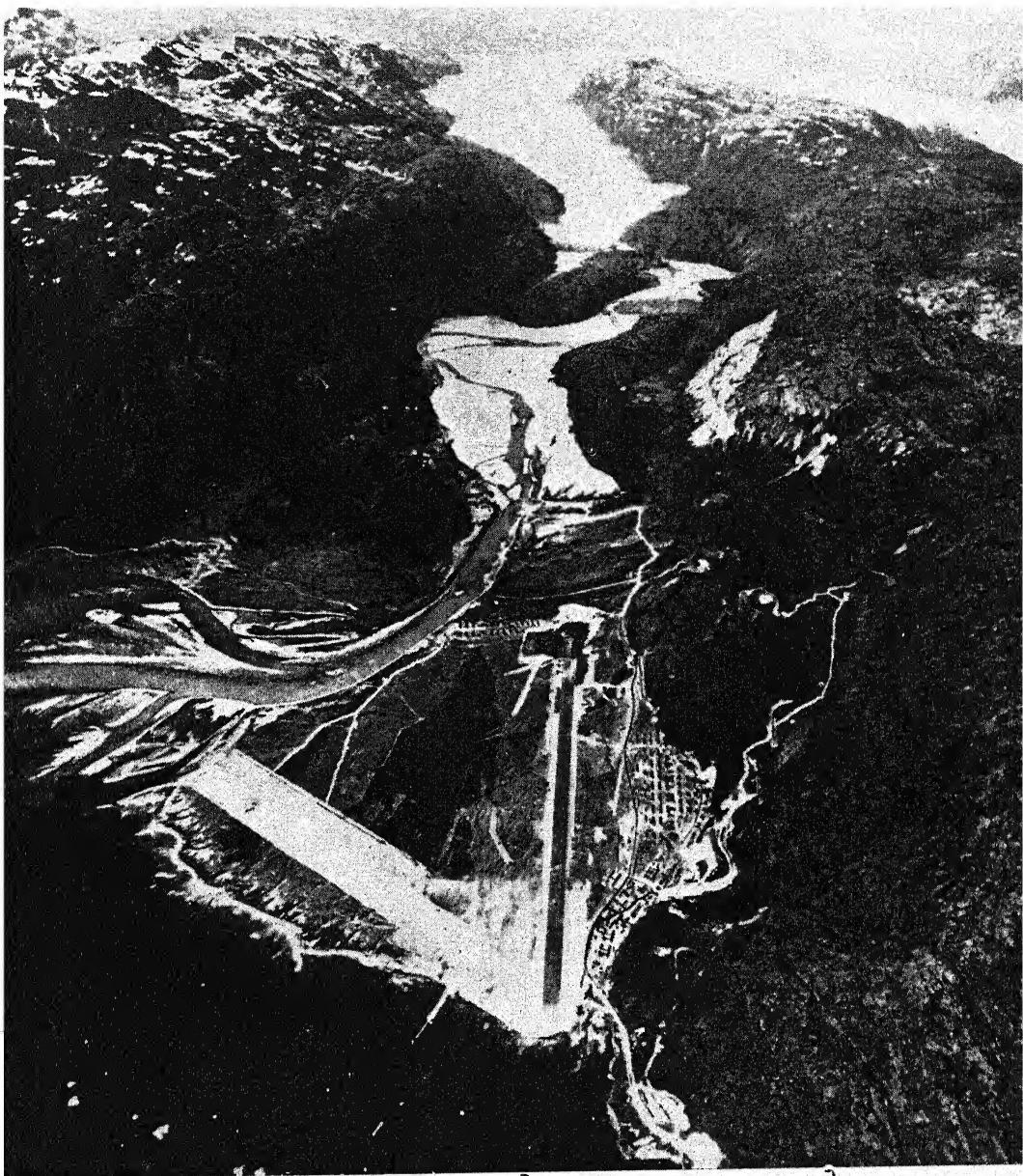
* See above, p. 122.

for the use of BW-8 contemplated also a landing field on the east coast of Greenland on the direct line of flight to Iceland, but surveys conducted during 1941 by Capt. Elliott Roosevelt and others failed to locate a suitable site for an airdrome.¹²⁰ A satisfactory site near Angmagssalik was found the following summer, and construction of the landing strip was completed in the fall of 1942.¹²¹ The route through BW-8 was planned as an alternate line of flight for aircraft moving from Goose Bay to Iceland during the periods when bad weather made landings impossible at BW-1 or when facilities at the latter base were overloaded. Surprisingly enough, the flying weather proved to be better along the alternate route through BW-8 and across the icecap of central Greenland than to the south along the route through BW-1.¹²²

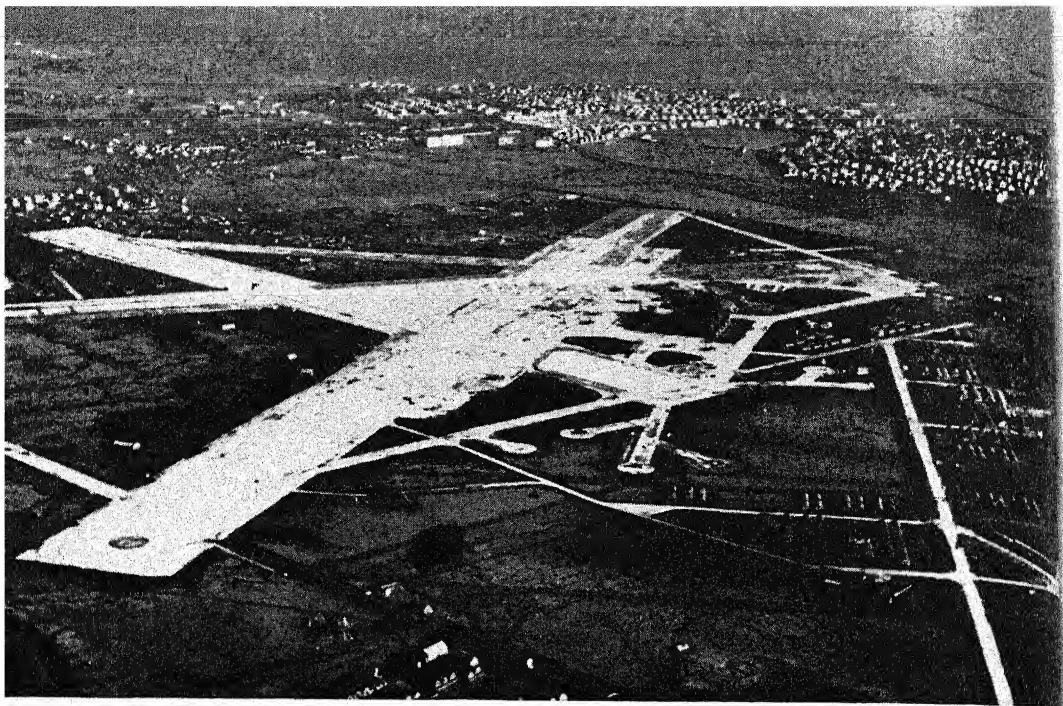
Two British airdromes in Iceland, at Reykjavik and Kaldadarnes, had been developed prior to the arrival of the first American occupation forces in July 1941. Built to accommodate the lighter types of aircraft used for defensive purposes, neither of the fields was suitable for large-scale ferrying of multi-engine bombers, and considerable improvement of the two bases became necessary in 1942. Sites for two other bases were found in the Keflavik area, and construction of what were to become Meeks and Patterson fields was begun in the spring of 1942.¹²³

At the western end of the North Atlantic route the principal terminal bases were located at Presque Isle and Houlton, Maine, and at Dorval airport near Montreal. Prestwick in Scotland became the eastern terminal of the route, with Stornoway in the Hebrides serving as an alternate landing field. The Presque Isle and Houlton bases had been planned originally to serve as transfer points at which Ferrying Command crews would turn over aircraft to the British for trans-oceanic delivery. Construction of facilities at the bases was authorized in August 1941, and the work proceeded through the fall under the direction of Ferrying Command control officers. The Presque Isle base, ready for limited operations by October, became the main port of embarkation for American aircraft flying the Atlantic either direct or by the short-range route. Here, in January 1942, the headquarters of the newly activated North Atlantic Sector of the Ferrying Command was established. Houlton became an alternate landing field.¹²⁴

All of these preparations would have been incomplete without provision for the weather service and communications system which are



BLUIE WEST 1, JUNE 1942



REYKJAVIK AIRFIELD, ICELAND, APRIL 1942

THE NIGHT SHIFT, PATTERSON FIELD, ICELAND, 1942



essential to the normal operation of any air route. The need for a widespread network of weather stations through the North Atlantic was especially great. Weather phenomena in the area—icing, fogs, turbulence, and thunderstorms—are associated with the southward movement of polar air masses from the Arctic and the movement north of warm air from the tropics. When these two dissimilar masses of air meet, a “front” is formed and at this point occurs much of the weather so hazardous to flying. The principal job of the weather men of the north was to locate these fronts and to plot and forecast their movements, which were generally from west to east, in order to enable pilots to know when to fly and when not to fly along a given route. Accuracy of forecasts depended on the experience of the weather observers and on the amount of data obtained. The latter in turn depended on the number of stations reporting.¹²⁵

Between March and December 1941, the Army Air Forces had established the framework of a weather service from Maine to Iceland, into which organization were drawn a number of Canadian and Danish stations. Weather and communications from Iceland into Britain remained for some time the responsibility of the British. The first AAF weather station in the North Atlantic area was opened at Gander Lake in March 1941 to serve air defense units soon to be sent into Newfoundland.¹²⁶ Thereafter, as new bases were established along the far northern ferrying route, weather and communications men moved in and set up their observation and radio facilities. Ten enlisted weather specialists accompanied the American advance task force into southern Greenland in July 1941. Six of them proceeded at once to set up weather and radio facilities in a tent at BW-1. The other four and one communications specialist were transferred to the Coast Guard cutter *Northland* and voyaged up the east coast of Greenland to install new radio and meteorological equipment at a number of Danish stations scattered along the coast as far north as Eskimonaes.¹²⁷ The Danish stations became an integral and important link in the AAF weather network. Two other American weather stations in Greenland were opened, at BW-8 on the west coast and at BLUIE EAST 2 (BE-2) near Angmagssalik on the east coast during 1941.¹²⁸ In September of that year, task forces were sent into northern Labrador and to Baffin Island to establish three weather stations at points surveyed earlier by an Army and Navy group under Captain Roosevelt.¹²⁹ These were the three CRYSTAL stations, located in

strategic positions for observing the course of air masses moving down from the Arctic regions of Canada. CRYSTAL I was located at Fort Chimo, Labrador; CRYSTAL II at the head of Frobisher Bay, Baffin Island; and CRYSTAL III on Padloping Island, just off the northeast coast of Baffin Island.¹³⁰

Nine months of work had gone into the building of the far northern route by the time the United States became an active belligerent. But more than six months of preparations on a much larger scale remained before the route would be ready to support heavy movements of aircraft to Europe. During the winter months that followed Pearl Harbor very little progress could be made, especially in the building or extension of permanent runways and parking aprons. More favorable weather in the spring of 1942 permitted the speed-up of construction activities at all points along the route, but at the same time it brought its own additional problems. At Goose Bay the compacted snow runways, satisfactory enough during the winter, began to soften with the spring thaw, necessitating a heavy covering of gravel. By June, one rolled gravel runway 6,000 feet long was ready and two others were under construction. Because the housing, messing, maintenance, and other facilities provided by the Canadian government at Goose Bay were inadequate for anticipated needs, the United States requested and secured authority in the summer to construct an entirely separate establishment, complete in every respect, on the opposite side of the airdrome from the RCAF station.¹³¹ At BLUE WEST 1 there had been completed by June one steel mat runway 5,000 feet long and another was under construction, while BW-8 had one good 5,000-foot gravel and clay landing strip. The Reykjavik airport in Iceland had three concrete runways, but two of these were capable of accommodating only the lighter types of airplanes and the third was less than 4,700 feet in length. Neither of the two American bases under construction in Iceland—Meeks and Patterson fields near Keflavik—was usable during 1942. American air force personnel were concentrated at the RAF base at Reykjavik, occupying facilities on the opposite side of the field from the British. The Prestwick airdrome in Scotland, having one concrete runway 6,600 feet long, was well equipped as a terminal point.¹³²

While construction work proceeded during the spring and summer, thousands of tons of supplies, including building materials, snow removal equipment, gasoline, food, and aircraft parts were moving into

the various installations by water transport and, to a limited extent, by air. The transportation and storage of sufficient supplies of gasoline alone constituted a logistical problem of considerable magnitude. Spare parts for each type of aircraft to be ferried over the route had to be stocked at each of the bases. With none of the stations was it possible to maintain unhindered water communications at all times. Goose Bay was accessible by water only from early June to October. BW-8, above the Arctic Circle, enjoyed a shipping season of surprising length, being open about six months of the year. But the weather station at CRYSTAL III could be reached by water for only about six weeks of the late summer and early fall. Enemy submarines were a constant menace along the shipping lanes, as were ice floes, heavy fogs, and submerged reefs in uncharted areas.¹³³

Principally because of the extreme shortage of transport aircraft, only a limited number of personnel and a relatively small quantity of supplies and equipment could be moved into the bases by air. But even during the winter, the Ferrying Command was able to operate a small-scale air transport service into Goose Bay in support of the construction work. With a single C-39, the command began moving contractor's personnel and supplies from Moncton, New Brunswick, to Goose Bay three days after Pearl Harbor.¹³⁴ In mid-February 1942, this C-39 military service was replaced by a contract carrier service operated by Northeast Airlines. Northeast maintained for some months a regular service between Presque Isle and Goose Bay by way of bases in Newfoundland and later extended its flights into Greenland, Iceland, and Britain.¹³⁵ Before June, when the Eighth Air Force began its air movement along the route, two other contract airlines conducted survey flights and opened regular transport services over the North Atlantic. Transcontinental & Western Air began to fly its Stratoliners over the route in April, going all the way into Prestwick.¹³⁶ During the same month, American Airlines, under contract to the Air Service Command, opened a service to Labrador, Baffin Island, and Greenland.¹³⁷ In the weeks immediately preceding the start of the Eighth's movement, the 60th Transport Group, a unit of that air force equipped with C-47's, gave considerable assistance in moving supplies and men into the bases.¹³⁸

Army Air Forces Headquarters, the Ferrying Command, and other interested AAF agencies were able to keep in touch with activities at the bases by means of numerous survey flights sent out over the

route by both the Ferrying Command and the contract airlines. These flights went only as far as Goose Bay during the winter, but by April they were going all the way to the British Isles. Early in April, Lt. Col. Milton W. Arnold, a member of the Ferrying Command operations staff, was ordered to make a general survey of the route and to determine the feasibility of flying fighter aircraft to Britain. His report was altogether pessimistic, although he raised no question as to the possibility of ferrying the lighter types of aircraft. He found operational facilities generally, and especially those for weather and communications services, as yet in a low state of efficiency. Colonel Arnold recommended that a qualified officer be given the job of flying the route continuously, armed with full authority by the War Department to take whatever corrective action might be found necessary. Arnold himself was given the job by Army Air Forces but his authority was limited to that of recommending, rather than ordering, remedial action to correct existing deficiencies. Accompanied by the regional weather and communications officers, he kept the route under constant surveillance during the months immediately preceding the movement of the Eighth Air Force and monitored the earliest flights after the movement started.¹³⁹

As an example of some of the fundamental problems still remaining to be overcome, it may be noted that on one of the survey flights during May Arnold found practically no weather information was being relayed between Iceland, Greenland, and eastern Canada, even though stations were scattered all through the area at that time. "Actual messages were found in which forecasts were requested from Gander and Presque Isle and were delivered fifteen days later to Greenland, and in another case, twenty-nine days later."¹⁴⁰ Little more than a month remained before the scheduled movement of the Eighth was to begin, a movement that obviously would be impossible under such conditions. Arnold and his associates worked continually at the job of instructing inexperienced weather and radio personnel, replacing those altogether unqualified, installing new radio equipment, and devising a simpler weather code.¹⁴¹ Considerable improvement had been made by late June, though the organization of fully dependable weather and communications services continued to demand the attention of responsible officers.

The story of the actual movement of the air echelon of the Eighth Air Force across the North Atlantic to the British Isles will be con-

sidered in another connection.* Here it will be sufficient merely to note its relation to the development within the AAF of a centralized control of ferrying and transport operations. By action of the Eighth Air Force which was confirmed by the AAF in a directive of 17 May, Brig. Gen. Frank O'D. Hunter of the VIII Fighter Command was given full operational control of the air movement of all units.¹⁴² To this action the Ferrying Command raised serious objections. Brig. Gen. Harold L. George insisted that unified control of all operational facilities and air movements over the route should be vested in the Ferrying Command in order to avoid the dangers of divided authority and to take advantage of the wider experience of its personnel. He recommended specifically that the North Atlantic Sector at Presque Isle be expanded into a wing of the Ferrying Command with direct control of operations over the route, that Col. Benjamin F. Giles, an Air Corps officer then commanding the Greenland Base Command, be appointed wing commander, and that the regional weather and communications officers be made directly responsible to the wing.¹⁴³ All of these recommendations were approved by the AAF except for a decision to avoid a last-minute change in the command of the Eighth's initial movement. During its first phase, General Hunter retained operational control of the aircraft, with control officers representing both the VIII Fighter Command and the Ferrying Command being stationed along the routes.¹⁴⁴ But Colonel Giles assumed command of the new North Atlantic Wing on 8 June, the regional weather and communications officers were assigned to his staff, and by late July the Air Transport Command, successor to the Ferrying Command, had taken over an undivided operational control of the route.¹⁴⁵

The Air Transport Command

Air transport services conducted by the Ferrying Command before Pearl Harbor, first to Britain and later to Cairo, had been little more than courier services and were entirely secondary to the major job for which the command was created—that of ferrying British aircraft from American factories to Canada or to ports of embarkation within the United States. The prewar Pan American transport services to and across Africa were also small-scale operations and, as pointed out earlier, were regarded principally as a means of supporting the more

* See below, Chap. 17.

important contract ferrying operation to the Middle East. In 1941, in fact, the concept of air transport as one of the principal channels of supply for the military forces in the field had not been fully grasped. Probably no one then foresaw that a network of long-range transport routes, supporting the daily movement of hundreds of tons of supplies and thousands of passengers, would spread over the world and that daily flights to such remote areas as the Aleutians, Australia, the Philippines, India, and China would become commonplace. Indeed, a limited view of the role of long-range air transportation in the war persisted for some months after the United States became an active belligerent. Not until the late spring and summer of 1942, when large backlogs of supplies awaiting air shipment to the front began to build up at ports of embarkation and when it became clear that almost unlimited demands would be made in the future for air cargo space for the rapid movement of urgently needed materials and personnel, did the idea of air transport as a major instrument of logistics begin to take shape.

In the weeks immediately following Pearl Harbor, the major air transport job was that of establishing and maintaining air communications with those combat areas in which the tactical situation was most critical. It was obvious from the first that maximum use would have to be made of the planes, men, and facilities of the civil airlines. The Ferrying Command was in no position to expand its own military transport services. The B-24 bombers modified for transport use were subject to requisition by the Air Force Combat Command, which necessarily enjoyed an overriding priority, or by the theater commanders in the field. Shortly after Pearl Harbor, most of the Ferrying Command's four-engine crews were transferred back to the combat units from which they had been borrowed. Of those remaining, some continued for a time to operate an emergency service to Africa and the Middle East, while others were absorbed into a project for training four-engine crews for ferrying replacement heavy bombers to the Far East.¹⁴⁶ The civil airlines, in addition to having the available flying personnel and physical equipment, had another equally valuable though less tangible asset. They had the wealth of practical knowledge in conducting scheduled air transport operations, the administrative competence, and the mastery of techniques that came from long experience. For these there was no substitute; neither were there means by which they could have been created in a hurry if they had not

already existed. Fortunately, they did exist and could be quickly harnessed for military purposes.¹⁴⁷

As early as 1936 the Air Transport Association of America, the trade organization of the civil airlines, working in conjunction with the Air Corps and the Army War College, had formulated a plan for the mobilization of the airlines in case of war. The plan had been kept up to date during the intervening years, and after Pearl Harbor it provided a broad program for the wartime utilization of the civil aviation resources of the country.¹⁴⁸ However, the emergency expansion of overseas transport services in the early months of the war grew out of immediate and specific needs, and was not based on carefully laid plans drawn up in advance. First there was the need for rushing emergency supplies by way of Africa to the Philippines and to China, then of supporting the heavy bomber ferrying movement to the Southwest Pacific, and at the same time increasing the flow of lend-lease supplies to the Middle East to bolster British and Russian resistance. Soon after 7 December, it became necessary to open air transport services to the air bases under construction in the upper Atlantic area, and by the spring of 1942 to establish regularly scheduled flights to Britain, Alaska, Australia, Panama, and the Caribbean area. Expansion on a piecemeal basis and under emergency conditions continued until the summer of 1942. Then, with the growing realization of the potentialities of air transportation, the concentration of control of air transport services in a single command of the Army Air Forces, and the great increase in the number of available aircraft and crews, it became possible to undertake a more orderly development in accordance with needs shaped by the long-range plans of the Joint Chiefs of Staff and the several theater commanders.¹⁴⁹

As a first step in mobilizing the resources of the airlines, President Roosevelt had signed an executive order on 13 December 1941 directing the Secretary of War to take possession of any portion of any civil aviation system required in the war effort.¹⁵⁰ Also on the 13th, the lend-lease administrator allocated twenty-five million dollars to the War Department and authorized it to enter into commitments up to that amount for the purchase of available four-engine aircraft, spare parts, equipment, and facilities for construction or for any other purposes necessary to the extension and operation of air transport services.¹⁵¹

In establishing new overseas services, the most pressing need of both

the Army and the Navy (the latter organized its own Naval Air Transport Service on 12 December 1941) was for land planes or flying boats capable of long-range operations with sizable payloads. Although some 406 multi-engine transports were operated within or beyond the continental limits of the United States by American commercial airlines before Pearl Harbor,¹⁵² all but a handful of these were two-engine planes, incapable of carrying a payload over such long overwater jumps as that from Brazil to Africa, from California to Hawaii, or from Newfoundland to Britain. When the United States entered the war the only types of four-engine transport planes in being and ready for use were the Boeing Clipper and the Martin M-130 flying boats, the Boeing Stratoliner land plane, and the modified B-24 Liberator. Only twelve Clippers were in existence, of which three had already been sold to Britain and one to the War Department, while eight were still owned by Pan American Airways. Pan American also owned the two existing Martin flying boats, while Transcontinental & Western Air, Inc., held title to the Stratoliners, of which there were only five.¹⁵³ The Ferrying Command was operating eleven B-24's on the eve of Pearl Harbor.¹⁵⁴ This list completes the inventory of four-engine equipment ready for use; and it had to be divided between the Army and Navy.

On the first Sunday following Pearl Harbor, the Assistant Secretary of War for Air called into conference a special aviation committee to consider the air transportation requirements of the Army, Navy, and the commercial airlines and to arrive at a fair and just allocation of available equipment. Representatives were present from the Ferrying Command, the Navy, Civil Aeronautics Administration, Civil Aeronautics Board, Pan American Airways, Transcontinental & Western Air, and other interested government and private agencies. At the meeting, an informal agreement was reached between the War and Navy departments whereby five of the eight Clippers which Pan American had already agreed to sell to the War Department and the two Martin flying boats would be turned over to the Navy. Later, when other long-range aircraft could be substituted for them, the other three Clippers, plus the one that the War Department had purchased in August 1941, were likewise to be transferred to the Navy.¹⁵⁵ In the way of four-engine equipment the War Department was left, then, with four of the Boeing Clippers, the five Stratoliners which were purchased from TWA by terms of a contract of 24

December 1941, and the B-24's. With the exception of a few additional Liberators converted to transports, these were all the four-engine planes that were available for overseas operations by the Ferrying Command and the contract carriers during the first six months of the war. The Douglas Skymaster, or C-54, which was to become the mainstay of long-range transport later in the war, was not yet ready, although the first numbers were in production and were turned over for testing during the summer. The C-87, a fundamental modification of the Consolidated Liberator, built especially for transport purposes, did not come into use until August or September of 1942.

Almost at once after the attack on Pearl Harbor, a part of the four-engine equipment controlled by the War Department was thrown into the desperate effort to reinforce and hold the Philippines. Certain critical items of supply—.50-cal. ammunition and aircraft parts especially—were needed badly by the air forces remaining to MacArthur, and air transport offered the only means of getting them there quickly and on time. In China, the American Volunteer Group was awaiting the shipment of P-40 parts to enable Chennault to keep his few fighters in the air. The only approach by air at this time, as indicated earlier in the discussion of the heavy bomber movement to the Far East, was by way of the southeastern route and across Africa and southern Asia. On 13 December a new contract was entered into by the War Department and Pan American Airways by which the latter agreed to sell the remainder of its four-engine equipment and, using a portion of that equipment on lease, to open a transport service between the United States and Singapore by way of Africa and India.¹⁵⁶ Within a week, one of the newly purchased Clippers departed for Calcutta loaded with P-40 parts for Chennault. Before the month was out, two other Clippers left New York for the Far East, each carrying a full load of .50-cal. ammunition destined for MacArthur's forces in the Philippines.¹⁵⁷ In the meantime, three of the Ferrying Command's B-24's manned by military crews were diverted from their normal operations between Washington and Cairo and sent to the Far East. A plan now emerged whereby the Clippers would take the ammunition as far as Darwin, Australia, at which point it would be picked up by the B-24's and flown into the Philippines. Because of the rapidly deteriorating tactical situation, however, the plan could not be put into effect. When the Clippers got as far as Calcutta, they were ordered to return across India to Karachi and there unload the

ammunition, where it was to be picked up later by the B-24's, which by this time had reached Australia. As it happened, the B-24's never returned to India, but, instead, remained in the Southwest Pacific where they were called upon to perform a series of remarkable special missions. Shuttling between Australia, the Philippines, the Netherlands East Indies, and Burma, they operated a flying taxi service for high-ranking officers, evacuated personnel from forward areas just ahead of the advancing Japanese, and flew urgent cargo into the Philippines. By early March all three of the planes had been lost, two to enemy action and one as the result of a forced landing on the water. Lt. Edson E. Kester—the pilot who had inaugurated the Washington-Cairo transport service in November—was lost off Broome, Australia, when his B-24 went down in flames in an attack by two Japanese Zekes.¹⁵⁸

With the abandonment of this attempt to open an air supply route all the way into Australia and the Philippines, the Ferrying Command turned its attention to the building up of the South Atlantic transport services to the Middle East and to extending operations into Iran and farther eastward to India. A supplementary agreement to the Pan American Airways-Africa contract had been signed on 13 December, providing for the extension of the trans-African schedules from Khartoum, the prewar terminal, to Cairo and to Tehran in order to support lend-lease ferrying operations of Pan American Air Ferries.¹⁵⁹ The trans-African transport services of the PAA-Africa organization grew rapidly. Only seven planes were in use at the time of Pearl Harbor, but by February the contractor had eighteen in operation, and by the end of June a total of thirty-eight twin-engine transports were shuttling back and forth between West African bases and Cairo, with occasional trips as far as Karachi, where they connected with the trans-India transport service then under the control of the Tenth Air Force.¹⁶⁰ The latter organization had opened in April 1942 a service destined to fame as the Hump operation,* thereby spanning the last gap in a strategic air supply line that reached from Miami, Florida, to Kunming, China.¹⁶¹

When the three Pan American Clippers returned to the United States from the Far East in mid-January, they were placed on the route from Miami to Lagos, Nigeria, connecting at that point with the trans-African service. The single Clipper purchased before the war

* See below, Chap. 14.

was already flying this route and making an occasional trip as far as Leopoldville in the Belgian Congo. In February, Transcontinental & Western Air began operating a shuttle service from Washington to Cairo, using two of the five Stratoliners purchased by the government under terms of the contract of 24 December. Until May, the Ferrying Command's B-24's continued to fly special missions to Africa and back. Nearly all of the four-engine equipment was thus concentrated on the southeastern route.¹⁶²

The long overwater flight from Brazil to Africa complicated the development of a sound operational plan for transport services between Miami and the west African bases. The Pan American Clippers were able to carry a maximum load of approximately 16,000 pounds along the Miami-Natal route, but had to lighten their payload at Natal to take on a heavier load of gasoline before making the Atlantic crossing. For this reason they were able to lift only about 10,000 pounds of cargo on each trip from Natal to Africa. In order to avoid piling up a heavy backlog of cargo and passengers at Natal, it became necessary for the Clippers to make occasional extra shuttles across the Atlantic before returning to the United States. Although this assured for a time a fairly even flow of cargo along the route, the few four-engine planes available were, from the very first, incapable by themselves of providing the necessary cargo space on the run to Africa. The heavy volume of supplies and the large number of personnel that began arriving at the Miami port of embarkation early in 1942 forced the adoption of a plan for using two-engine transports on the Miami-Natal leg of the route and gradually shifting the four-engine equipment to the transoceanic crossing.¹⁶³

Pan American opened the two-engine service to Natal early in February 1942. For several weeks no fixed schedules were flown, but by the end of the month, equipped with five C-53's, the contractor was operating a regular schedule of approximately three round trips a week. Pan American gradually increased this service as more planes became available and as the volume of air traffic grew. By the end of June, the number of planes in use had grown to fourteen and two round trips a day were being flown over the 4,000-mile route.¹⁶⁴ An additional two-engine service south from Miami was inaugurated on 1 May 1942 by Eastern Air Lines, operating under the direction of the Air Service Command. For the first month or two, Eastern flew only to Trinidad, Puerto Rico, and Nassau but extended its service to

Natal toward the end of June, at which time the operation came under the control of the newly created Air Transport Command.¹⁶⁵ With the build-up of the two-engine services to Natal, it became possible to concentrate the four-engine transports on the Atlantic crossing where full advantage could be taken of their capacity for carrying heavy payloads on long-range flights. By June the Pan American Clippers were flying only the transoceanic leg of the route except for necessary trips back to New York for inspection and overhaul. In the same month five new B-24D's, flown by military crews of the Ferrying Command, were placed on the South Atlantic crossing. During the spring and early summer of 1942, heavy backlogs of cargo and passengers had piled up at both Miami and Natal, reaching almost unmanageable proportions; but the increased number of planes in use by June and the more frequent schedules made it possible to reduce the backlogs gradually and to assure thereafter a more even flow of traffic to Africa, India, and China.¹⁶⁶

Throughout the first half of 1942, and, indeed, until considerably later, the South Atlantic remained by far the most important of the overseas air transport routes, just as it supported the heaviest ferried traffic during the same period. Other routes, however, were being opened, and some eventually carried a heavier flow of air traffic than the route to Africa and southern Asia. In the North Atlantic, as we have seen, new contract services were inaugurated during the winter and spring of 1942 in order, first, to speed the completion of air bases in preparation for the movement of the Eighth Air Force, and, when this was accomplished, to support the movement itself and to establish regularly scheduled services into Great Britain. Under terms of a contract of 31 January 1942, Northeast Airlines, equipped originally with two C-53's, opened a transport service to Goose Bay in mid-February and to Greenland in the early spring. Northeast sent its first flight into Iceland in May, and in July, with more planes available, extended its operations to Prestwick, Scotland.¹⁶⁷ American Airlines entered into a contract with the government, approved on 4 April 1942, to provide a transport service between New York and Reykjavik, Iceland. Originally undertaken for the Air Service Command, the operation passed to the control of the Air Transport Command early in July.¹⁶⁸ On 13 April, Transcontinental & Western Air dispatched its first Stratoliner flight over the North Atlantic to the United Kingdom, thus reopening a through service that had been

closed down since the preceding October when the Ferrying Command had been forced to discontinue its B-24 shuttle service. Thereafter, three of TWA's Stratoliners operated regularly over the North Atlantic into Britain.¹⁶⁹

War with Japan had also focused attention on the alarmingly inadequate state of United States defenses in Alaska and brought about an early speed-up in work already under way toward the establishment of an air route to the northwest. In December 1941, the air bases and weather and communications facilities along the inland route through Canada, running east of the Rocky Mountains and crossing over through Whitehorse to Fairbanks, were in a state that might be described as usable under optimum conditions.¹⁷⁰ These conditions did not exist in the winter of 1941-42, as was discovered in January when an attempt to ferry twenty-five P-40's and thirteen B-26's along the route met with disaster.* On 20 February 1942, the U.S. government entered into a contract with Northwest Airlines, giving that organization the main responsibility for further development of the inland route.¹⁷¹ Not only was Northwest to operate an air transport service; it was also to make whatever improvements were required to enable the route to support the flow of ferried military traffic that was anticipated. The transport service provided a means for the quick return of ferrying crews following the completion of deliveries and assured a fast mail service as well as air cargo space for the movement of a limited amount of urgently needed supplies, such as airplane parts and communications equipment, and essential personnel. By terms of the contract, terminal points were established at Fargo, North Dakota, and Fairbanks, but the southern terminus was soon shifted to Minneapolis, where cargo for air shipment could more easily be assembled. Northwest dispatched its first survey flight on 27 February, which was followed during March by a series of shuttles to familiarize pilots with the route and to deploy personnel and materials required for regularly scheduled operations.¹⁷²

Quantitatively viewed, the Alaskan operation was of little consequence before the last days of May. Reports of Northwest Airlines show that in the period from 21 March through 30 April approximately 170 tons of cargo and 258 passengers were carried, and that the corresponding figures for the month of May were 240 tons and 631 passengers. About one-third of the April total and more than half

* See above, pp. 303-4.

of that for May consisted of what the railroads describe as "company traffic," that is, supplies and equipment for Northwest's own stations. Part of the remainder was carried for the engineers at work on the Alaskan highway.¹⁷³

Two other airlines began operations in the northwest during the spring of 1942, both under the supervision of the Air Service Command. In mid-April, Western Air Lines opened a contract service from points in the United States to Edmonton, Alberta. The service was established primarily to transport cargo from air depots within the United States to Edmonton, but it also furnished a connecting link by means of which returning ferrying crews were able to get from Northwest Airlines' facilities at Edmonton to commercial facilities at Great Falls, Montana.¹⁷⁴ A subsidiary of United Air Lines was awarded a contract on 4 April 1942 to operate two DC-3's on a one-trip-a-week basis from air depots at Dayton, Ohio, and Ogden, Utah, to Fairbanks by way of Edmonton. The first survey flights were flown on 17 April, and regular service began on 15 May.¹⁷⁵ A new contract with United, approved on 25 June, authorized additional services from Dayton to Anchorage, Alaska, and from Edmonton to Anchorage.¹⁷⁶

The developing Japanese threat to the Aleutians in late May 1942 and the actual attack early in June brought about a sudden and rapid increase in both transport and ferrying operations along the northwest route. Existing transport schedules were speeded up and the routes extended and, in addition, the personnel and resources of other airlines were hastily mobilized for emergency support to military forces in Alaska. On 13 June, eleven airlines were ordered to send all available planes to Edmonton. Commercial schedules were canceled, passengers were dropped at the nearest airport, crews took off without even changes of clothing, and within the next several days forty-six airplanes were concentrated at the Edmonton base. Routes were quickly assigned. Northwest continued to fly its existing routes with an extension to Dayton and Anchorage. United Air Lines concentrated on the routes from Patterson Field, Ohio, to Anchorage and from Salt Lake City to Fairbanks. Pennsylvania Central shuttled between Dayton and Edmonton. The other airlines flew cargo from various air depots in the United States to Alaskan points. Both Northwest and United made numerous trips to Nome, particularly in the last days of June when Japanese activity was reported in the vicinity. The garrison at Nome was built up overnight, entirely by air.¹⁷⁷

The pilots and crew members who took part in the operation had a rough time. Many of them were inexperienced in arctic flying, and the tension of prolonged instrument flight and the knowledge that maps were inaccurate, that facilities were minimal, and that no search and rescue system existed produced a mental stress that served to intensify the physical exhaustion caused by long hours in the air. The assumption by the Alaska Defense Command of the right to commandeer any aircraft that crossed the border resulted in pilots being kept in Alaska until their maximum flight time was reached and in some cases exceeded; half a month's flight time would be performed in three days or less, and when the crews returned to Edmonton they were an exhausted, unshaven, red-eyed lot. By the end of July the operation tapered off and planes were being returned to normal commercial operation, but several of the airlines continued to make emergency flights to and through Edmonton until September.¹⁷⁸

Following the failure of the early attempt to open an emergency air supply service into the Southwest Pacific by way of Africa, no further effort was made by the AAF to establish regular air communications with the area until April 1942. By that time, construction of bases and facilities along the new South Pacific route between Hawaii and Australia was far enough advanced to permit a scheduled trans-Pacific operation on a small scale. While the initial service was undertaken chiefly for the purpose of returning ferrying crews from Australia to the United States, it also provided a means of getting a limited quantity of badly needed supplies to the Southwest Pacific.¹⁷⁹ Pursuant to a directive from General Arnold to secure two of the LB-30's repossessed from the British and open the service, the Ferrying Command selected Consolidated Aircraft Corporation as the logical operating agency.¹⁸⁰ Though Consolidated was an aircraft manufacturer rather than an airline, its own crews had been ferrying aircraft to the Dutch in the Netherlands East Indies, and the company had, as a consequence, a pool of pilots experienced in trans-Pacific flying.¹⁸¹ Regular operations began on 23 April 1942 when one of the LB-30's was dispatched from San Diego to Australia carrying 1,900 pounds of airplane parts, radio parts, and mail. It returned eleven days later with twenty-two Ferrying Command pilots and other ferrying crew members aboard. The regular route ran from Hamilton Field, California, to Hickam Field, Oahu, and thence by way of Christmas Island, Canton Island, the Fiji Islands, and New Caledonia to Australia. In

June, the Consolidated service was enlarged by the assignment of three additional Liberators to the run; and in September, United Air Lines opened a second contract service over the same route with four of the new C-87's. By October, twelve four-engine transports were operating between the West Coast and Australia.¹⁸²

It should be clear from frequent references to contract carrier services operated for the Air Service Command that the Ferrying Command was not the only AAF agency directly concerned with air transportation. Nor, indeed, was it the first. Months before the Ferrying Command was organized, the 50th Transport Wing of the Air Corps Maintenance Command, which became the Air Service Command in October 1941, had been operating a well-established military transport service within the continental limits of the United States. The wing's principal function was that of transporting technical Air Corps supplies between the various air depots and subdepots scattered about the country; but it also furnished transport aircraft and pilots for use in training parachute troops and airborne infantry. During the first half of 1941, the wing's domestic air cargo service carried more freight than all of the commercial air carriers in the country.¹⁸³

For some months after the United States entered the war, the domestic cargo operations of the Air Service Command continued on a purely military basis. In the spring of 1942, however, the command was forced to enlist the services of commercial carriers operating under contract. On 30 April, the 50th Transport Wing and its tactical training functions were transferred to a new organization temporarily designated the Air Transport Command but soon renamed the Troop Carrier Command.¹⁸⁴ Having lost jurisdiction over the 50th Transport Wing, the Air Service Command was entirely dependent thereafter on the commercial carriers for the conduct of its air freight service.

During the spring the Air Service Command negotiated contracts with commercial carriers for services over various domestic routes and, furthermore, enlisted the services of the civil carriers in establishing air transport lines to air bases in the upper Atlantic, in Alaska, and in the Caribbean area, as well as to Panama by way of Mexico and Central America. To administer these operations, the command organized a Contract Air Cargo Division staffed largely by officers who had been called to military duty from executive positions with the airlines. By June, the new division operated a daily average of forty

twin-engine transports. Cargo handled amounted to approximately 2,000 tons in May and 2,500 tons in June.¹⁸⁵

For several months after war began, there was no serious overlapping of the transport activities of the Ferrying Command and the Air Service Command. The former was engaged only in long-range overseas operations, while the latter, at least in the beginning, confined its own transport activities to the domestic field. But when the Air Service Command began extending its operations beyond the borders of the United States, areas of duplication developed, and by March 1942 the need arose for a clear division of responsibility. On 24 March, General Arnold issued a directive assigning to the Air Service Command responsibility for transporting aviation technical supplies to points within the Western Hemisphere, including Alaska, the Caribbean area, Greenland, and Iceland. As soon as possible it was to inaugurate a transport service to Honolulu. The Ferrying Command was given control of all air transport services beyond the Western Hemisphere and, for the time being, it was to control all ferrying of aircraft within the United States and to overseas destinations. It will be noted that the Ferrying Command's title to its basic function of ferrying aircraft within and beyond the United States was rendered somewhat uncertain by the phrase "for the time being." Furthermore, the proposed Air Service Command operation to Honolulu would have been in contravention of the Ferrying Command's responsibility to operate all transport services extending outside the Western Hemisphere.¹⁸⁶

Obviously, the whole arrangement was only a temporary expedient, but nothing further in the way of clarification was attempted until June. By that time it had become apparent that the division of authority given on 24 March had resulted, to quote General Arnold, in "substantial duplication of effort and a confusing dual responsibility."¹⁸⁷ Mr. L.W. Pogue, chairman of the Civil Aeronautics Board, in a memorandum dated 15 June, gave a detailed and trenchant description of the confusion and duplication then prevalent in the field of military air transport. He expressed the opinion that the ideal solution would be the creation of a new command, independent of both the Army and the Navy, which should control practically all military air transport operations. As a less desirable but more feasible step he recommended that, at the least, all air transport services within the Army be unified under one command.¹⁸⁸

A memorandum of General Arnold on the subject and that of Mr. Pogue were submitted to a board of officers, with instructions to consider the whole problem.¹⁸⁹ Before the board could make an official report, however, General Arnold had reached a decision; and, on 20 June, Army Air Forces issued General Orders No. 8, which embodied substantially the second recommendation of Mr. Pogue. The Ferrying Command was renamed the Air Transport Command, and the organization hitherto known by the latter title was redesignated the Troop Carrier Command. Effective 1 July, the new Air Transport Command was given the following sweeping responsibilities:

a. The ferrying of all aircraft within the United States and to destinations outside of the United States as directed by the Commanding General, Army Air Forces.

b. The transportation by air of personnel, materiel, and mail for all War Department agencies, except those served by Troop Carrier units as herein-after set forth.

c. The control, operation, and maintenance of establishments and facilities on air routes outside of the United States which are, or which may be made, the responsibility of the Commanding General, Army Air Forces.

Paragraph *b* was further clarified by the assignment to Troop Carrier units of responsibility for providing transportation for parachute troops, airborne infantry, and glider units; and for conducting local air transport services within the theaters of operations.¹⁹⁰

Shortly after the issuance of General Orders No. 8, the personnel and functions of the Contract Air Cargo Division of the Air Service Command were transferred to the Air Transport Command. Thus the division of responsibility between the two commands was ended.¹⁹¹

One other area of conflict in the field of military air transport had yet to be eliminated. The transportation service of the Services of Supply had been assigning priorities for travel on commercial and military aircraft and was, furthermore, planning to institute an independent air transport service of its own. Had this step, which was imminent in June, been taken, the confusion to which Mr. Pogue objected would have been further increased. This potential source of duplication was removed by the agreement of the Services of Supply to transfer to the AAF, and hence automatically to the Air Transport Command, not only the air priorities function but all of its air transportation responsibilities. The transfer was made effective by a War Department directive of 1 July.¹⁹²

The newly created Air Transport Command consisted of two main divisions, the Ferrying Division and the Air Transportation Division, corresponding roughly to the two primary responsibilities of the command.¹⁹³ At the time it was redesignated and given its enlarged mission, the command was already in the process of reorganization. Five major field organizations, known as wings, were constituted on 12 June 1942 and activated at various dates during the latter part of the month.¹⁹⁴ Initially, they were known as the 23d through the 27th AAF Ferrying wings, but the command soon requested and secured a change to more descriptive geographical names. On 5 July, they were redesignated the North Atlantic, Caribbean, South Atlantic, Africa-Middle East, and South Pacific wings.¹⁹⁵ Through these field organizations or subheadquarters, and others that were created later, the command was able to exercise more direct and closer supervision over both its ferrying and transport activities, which were by now becoming world-wide in scope and were growing to such an extent that the old highly centralized control exercised by the Ferrying Command was no longer practicable.

During the thirteen months of its existence, the Ferrying Command had grown from an original staff of two officers and a civilian secretary to a strength of over 11,000 officers and enlisted men, in addition to its civilian employees and those of the civil air carriers operating under its supervision. As the name implies, ferrying had been its main job; and during the period its pilots ferried 13,595 aircraft to final domestic destinations, while 632 planes were delivered to foreign destinations under the supervision of the command.¹⁹⁶ The ferrying activity continued to increase as more aircraft were turned out by the factories, as new combat units became ready for deployment overseas, and as the need for battle replacements grew; but after the organization became the Air Transport Command and when it became the single strategic aerial supply arm of the War Department, more and more emphasis came to be placed on the air transportation function. Air transport had passed beyond the stage of being primarily a courier service or an adjunct to ferrying; it was well on the way to becoming a major instrument of logistical support to combat operations on the ground and in the air. More than 130 two- and four-engine transport aircraft had become available to the command by 1 July 1942, of which 10 or 15 were being flown by military crews and the remainder by the contract carriers.¹⁹⁷ A large number of these had come from new

production, some were acquired from the Air Service Command, but others became available as the result of a presidential order of 6 May directing the Secretary of War to commandeer all transports of the DC-3 type operated by the domestic air carriers in excess of 200 and to refit them "for such transport services as will most effectively serve the war purposes of the United Nations."¹⁹⁸ The transfer of the aircraft from the airlines to the War Department made it possible for the former also to release additional crews for employment in military operations.

A long-range air supply system, conducted on the basis of pre-determined and established schedules and operating into or through a number of theaters and independent commands exercising military jurisdiction along overseas air routes, had to be reasonably free from control by local commanders. A transport or ferried airplane flying from the West Coast to Australia in 1942 passed through the territory of four principal commands before reaching its destination; and over the North Atlantic a plane flying from the United States to Great Britain might traverse the jurisdictional area of as many as five separate theater or base commands. In the early months of the war, the theater commanders, whose powers, traditionally, were almost without limits within the established boundaries of their own commands, frequently diverted scheduled transport aircraft and crews operating under the control of the Ferrying Command to their own immediate tactical needs. In other instances, ferrying crews, upon completion of deliveries to a theater, were held for a time by local authorities instead of being returned promptly to the United States. While such practices might have been justified in emergencies, if carried too far they would have led inevitably to a complete breakdown of the developing system of strategic air supply. The theater commanders were, in short, adopting a policy contrary to their own long-range interests.¹⁹⁹

The jurisdictional difficulty began in the Middle East early in 1942 when Brig. Gen. Elmer E. Adler, then the ranking Air Corps officer in that area, attempted to pre-empt control of Ferrying Command operations and personnel in Africa. The misunderstanding, however, was promptly removed by strongly worded messages from General Arnold and General Olds.²⁰⁰ More serious and prolonged interference came from the commanding generals of the Southwest Pacific Area, the China-Burma-India theater, and the Alaska Defense Command.²⁰¹ The necessity for protecting Ferrying Command operations was the

subject of frequent representations by that organization and the Army Air Forces. In response to these representations, the War Department published a directive on 6 June 1942 which attempted to bring some order into the relations between the Ferrying Command and the theaters. The Ferrying Command was declared to be "a War Department service agency" under the direct control of the Commanding General, Army Air Forces, who served as agent of the War Department. Theater commanders were enjoined to limit interference with Ferrying Command operations or appropriation of its facilities to occasions of specific emergency.²⁰²

This letter, as General George soon pointed out, was entirely too weak. The same difficulties continued to be encountered by the Air Transport Command. It was not easy to convey to theater commanders an entirely new concept of control, one which ran contrary to the traditional understanding of theater prerogatives. Upon the request of General George, a stronger statement was published in September 1942, but not until February of the following year would a War Department directive be issued that was sufficiently forceful and comprehensive.²⁰³ By the summer of 1942 it was already becoming clear that, so far as long-range air transport services were concerned, the world was a single theater of operations.

*LOSS OF THE NETHERLANDS
EAST INDIES*

BY THE end of December 1941 the Japanese, in addition to striking the United States Navy a crippling blow at Pearl Harbor, had destroyed for all practical purposes the Far East Air Force, had driven the American Asiatic Fleet, together with the remnants of Patwing 10, from its Philippine base to the Netherlands East Indies, had accomplished the virtual isolation of General MacArthur's troops on Bataan and Corregidor, and were well on the way to complete encirclement of the Philippines. Already they had landed in Borneo as a part of the encircling movement and as the initial encroachment on the fabulously wealthy Netherlands East Indies. Simultaneously, they had forced the capitulation of the British garrison at Hong Kong and had penetrated Thailand, where, meeting only a token resistance, they promptly began to assemble the forces for drives into Burma and the Malay States that would end in the fall of Rangoon and Singapore. As much as the Americans would have liked to put the issue to a test in the Philippines, the battle now was for Malaya and the Netherlands East Indies.

Hope of barring the way to further advances in the skillfully directed and sensationally successful Japanese drive depended upon an effective co-ordination of effort by hastily assembled and ill-prepared American, British, Dutch, and Australian forces. Unhappily, prewar consultation among the interested staffs had not been advanced to a point comparable to that reached in the American-British conversations regarding common problems in the Atlantic. Through the months immediately preceding Pearl Harbor, however, significant steps toward effective collaboration had been taken. Agreements had been reached for the use of Australian bases in the ferrying of heavy

bombers to the Philippines and for the development of installations essential to the South Pacific air route; an exchange of visits between American, British, Dutch, and Australian officers had occurred; and commitments had been made for a sharing of intelligence and of the responsibility for reconnaissance to facilitate close co-operation. Indeed, by November 1941 the threatening crisis in relations with Japan had brought a general agreement extending somewhat beyond a policy merely of co-operation: the commanders of the British Far Eastern Fleet and the American Asiatic Fleet were to draft a joint plan of naval operations with a view to its expansion by consultation with the Dutch into a three-power plan of action; air and ground commanders—American, British, and Dutch—similarly were to prepare joint plans for operations to be co-ordinated where necessary with those of the naval forces; close liaison was to be maintained between all major headquarters, logistical facilities would be shared, and local commanders might agree upon unity of command for particular task forces.¹ The march of events allowed little time for the perfection of these plans. But a beginning had been made; and under the impact of an emergency far more serious than any that had been anticipated, the principle of unity of command already agreed upon as a basic feature of Anglo-American collaboration was accepted by the associated powers in the Pacific.

The ABDA Command

Responding to General Marshall's argument that "a man with good judgment and unity of command has a distinct advantage over a man with brilliant judgment who must rely on cooperation,"² the ARCADIA conference of the British and American chiefs of staff on 29 December considered a draft directive for a supreme commander of the so-called ABDA (American, British, Dutch, Australian) area.* On the same day, Prime Minister Churchill informed Gen. Sir Archibald Wavell of his selection as supreme commander, and by 2 January a directive for the new command had been approved tentatively by the President and the Prime Minister.³ The newly established theater included Burma, Malaya, the Netherlands East Indies, and the Philippines. As supreme commander, General Wavell was to hold Burma and the Malay barrier—a line presumably well anchored at Singapore

* For a discussion of this and other action of the ARCADIA conference with reference to the over-all strategy of the war, see above, Chapter 7.

on the west and extending through the Netherlands East Indies to Australia on the east—to achieve over this area a “general air superiority” by concentration as occasion required of available air forces, to re-establish communications with Luzon through the Netherlands East Indies, to provide support for the beleaguered garrison under MacArthur in the Philippines, and at the earliest possible opportunity to launch offensive operations designed to roll back the advancing Japanese tide.

General Wavell’s responsibility in the new command, which he formally assumed on 15 January, was primarily operational.* He was to co-ordinate on the theater level the operations of all forces assigned to the area by the ABDA governments, to arrange for the formation of task forces to undertake specific missions, and for their command he was to designate officers of his choice “irrespective of seniority or nationality.” He also was “to direct and coordinate the creation and development of administrative facilities and the broad allocation of war materials; to dispose reinforcements, to require reports from the commanders of armed forces assigned to the ABDA Area, and to control the issue of all communiques.” Orders issued by Wavell were to be considered as emanating from the respective ABDA governments, but the supreme commander was not to interfere with the “administrative processes” of the several forces under his command, nor was he to divide any “national component of a task force” for attachment to other components “except in the case of urgent necessity.” Moreover, he was instructed that commanders under him would enjoy freedom of communication with their respective governments. “In the unlikely event,” so reads his directive, “that any of your immediate subordinates, after making due representations to you, still considers that obedience to your orders would jeopardize the national interests of his country to an extent unjustified by the general situation in the ABDA area, he has the right, subject to your being immediately notified of such intention, to appeal direct to his own government before carrying out the orders.” The problem of assuring due consideration for national interest and sensitivity is further reflected in a provision for representation of each of the ABDA governments on Sir Archibald’s staff, and in the recognition given to the possibility that selec-

* On 18 January, he located his headquarters at Lembang, ten miles north of Bandoeng in Java.

tion of commanders for the combined naval and air forces might require a decision by the governments concerned.⁴

Actually, the major problems confronted in establishing the command proceeded chiefly from the novelty of the undertaking, the extreme demand for haste, the vastness of the area involved, the absence of adequate communications facilities, and the lack of other aids which could have been provided only through long and careful planning. Inevitably, the early days were marked by confusion and uncertainty as to procedural and other channels. Chief among the American officers identified with the command were Adm. Thomas C. Hart, commanding the U.S. Asiatic Fleet; Maj. Gen. George H. Brett, who on 31 December had arrived in Australia to assume command of United States Army Forces in Australia (USAFIA); his chief of staff, Brig. Gen. Julian F. Barnes; and Maj. Gen. Lewis H. Brereton, in command of the remnants of the U.S. Far East Air Force.* General Brett apparently had already been selected as Wavell's deputy when in the second week of January he flew to Java for a conference with the supreme commander. By 12 January, General Brereton had been directed by the War Department to assume vice Brett the command of USAFIA, but at approximately the same time Brereton also received appointment as deputy chief of air staff for ABDA.⁵ Though the burden of this latter assignment would be lessened upon the arrival of Air Marshal Sir Richard E.C. Peirse, who had been selected as air commander (ABDAIR) for ABDA,† Wavell insisted that two such assignments, one in Australia and the other in Java, were too much for one man to carry.⁶ General Marshall already had suggested that Brett might "volunteer" to assume some of Brereton's duties pending Peirse's arrival, but Wavell pointed out that in addition to a considerable responsibility for the operational direction of the air forces, General Brett would be responsible for lines of supply both from Australia and from India. Indeed, it was Wavell's feeling that Brett should have the additional assistance of some air officer of high rank in Australia who would take charge of that section of the supply route supporting the ABDA operations.⁷

Accordingly, on 17 January Brereton was designated by the War Department as commanding general of American tactical forces in the ABDA area, which of course would be largely air forces, and General

* See above, pp. 226-31.

† Peirse assumed command on 28 January.

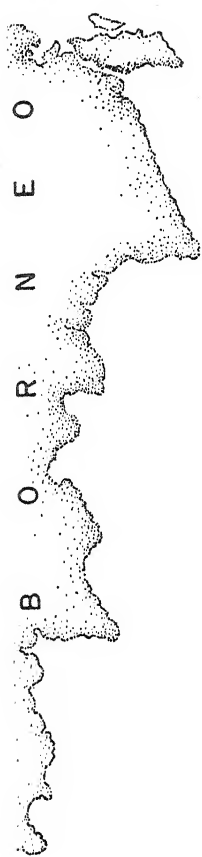
Barnes was placed in command of base facilities in Australia, a command formally assumed by him on 27 January.⁸ Meanwhile, Brett had taken up the duties of deputy commander and intendant general to Wavell; in the former capacity, he informed the War Department on 20 January, he would supervise all air activities in the theater, and in the latter capacity he would be responsible for co-ordination of all administrative, supply, and maintenance activities for both air and ground forces.⁹ When, late in January, Admiral Hart sought relief from the combined command of naval forces and agreement was reached on Dutch Vice Adm. Conrad E.L. Helfrich as his successor, it was suggested by the President that Brett might replace Peirse in the air command, thus assuring continuance of a representative of the United States in one of the major operational commands. But Brett himself, who recently had been promoted to lieutenant general and whose position as deputy to Wavell gave him wide influence, objected to the unsettling effect of a "drastic change" at that time, and when Helfrich replaced Hart on 14 February, Peirse remained in the air command.¹⁰ There had been an understandable confusion at the outset; and equally understandable, there were times when in the heat of battle national jealousies found momentary expression.¹¹ But the American officers were left with no uncertainty regarding the extent of their obligation to this new type of combined effort. As General Marshall informed Brereton by radio in January, it was the War Department's fixed policy to seek the enemy's defeat by a unified effort under the leadership of General Wavell. Brereton's mission, as Marshall succinctly added, was to execute the orders issued by Wavell.¹²

A natural division of effort gave to the British a primary responsibility for defense of Burma and the Malay States and to the Americans the major responsibility for the air defenses of the Netherlands East Indies. The Netherlands government had at hand a regular army of some 40,000 men and, in addition, perhaps 100,000 native troops; of necessity these forces would constitute for the time being the main resistance on the ground. The Dutch command, recognizing its inability to defend all of the islands, had posted small garrisons at strategic points throughout the Indies, principally to carry out necessary demolitions before withdrawal, and had concentrated its main strength on Java. Here numerous airdromes had been prepared: military fields at Kalidjati, Bandoeng, Magelang, Madioen, Malang, Batavia, and Soera-

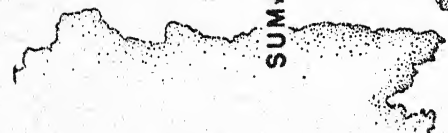
baja; commercial airports at Cheribon, Semarang, and Jogjakarta; and a considerable number of emergency landing fields well distributed across the countryside. The Dutch had also constructed modern airfields on Sumatra, Borneo, Celebes, and Amboina, and suitable at least for use by pursuit planes were the fields on Timor, Soemba, and Bali.¹³ But the government of the Netherlands East Indies lacked a modern air force. In January 1942 its approximately 150 planes were all of ancient make: the pursuits were either Curtiss or Brewster models, and the bombers were principally Martin B-10's. Attempts had been made to replace these obsolete craft by purchase from the United States, but the demands on American production at the time were altogether too great to permit a meeting of the Dutch request either as to the models desired or the time of delivery.¹⁴ Decidedly limited, too, was the aid that could be expected from the Royal Australian Air Force.¹⁵ Much of its strength in Australasia consisted of obsolescent planes, and the demands for a defense of Australian territory were immediately pressing. The Japanese would land at Rabaul in New Britain on 23 January and before the month had run its course would bring under air attack New Ireland and Lae, Madang, and Salamaua in New Guinea.

The hope of an effective air defense of the Netherlands East Indies depended chiefly therefore upon plans for reinforcement of the AAF in the Southwest Pacific. The eighteen P-40's and fifty-two A-24's which had reached Brisbane on 22 December, even when joined with the fourteen B-17's brought down from Del Monte to Darwin, constituted hardly so much as a token force. But as the British and American staffs assembled in their ARCADIA conference at Washington, it was proposed to build up AAF strength in the western Pacific to a total of two heavy and two medium bombardment groups and six pursuit groups. Plans called for an early transfer from the United States of 80 heavy bombers, 114 medium bombers, and 480 pursuit planes.¹⁶ The heavy bombers would go by air, under a schedule calling for 3 B-17's to leave the United States on or about 24 December, the same number on the following day, and thereafter at the rate of 6 bombers per day.*¹⁷ It was anticipated that 55 pursuit planes, with crews, would reach Australia by 8 January and an additional 125 within ten days thereafter; a complete pursuit group with 80 planes was scheduled to leave San Diego on or about 10 January. The ex-

* See above, pp. 332-36.

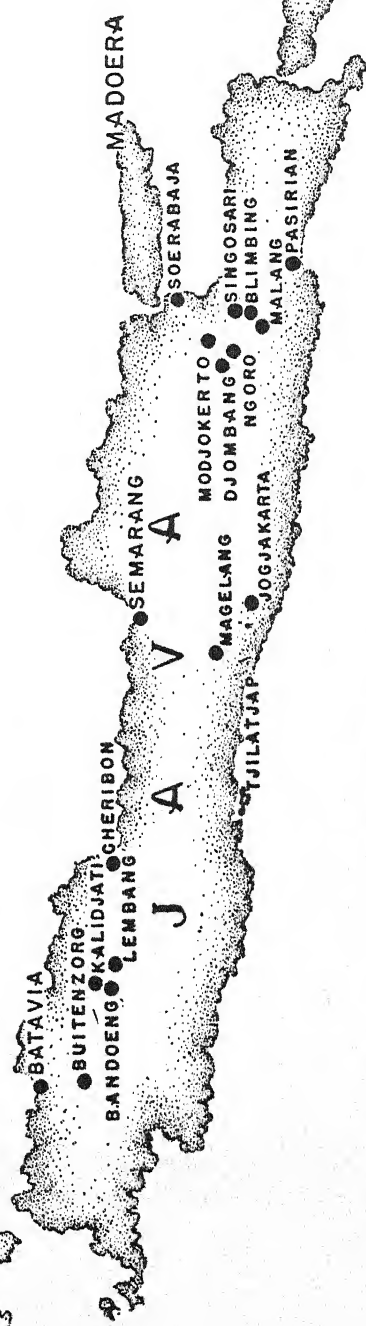


B O R N E O



SUMATRA

JAVA SEA



J A V A



BALI

INDIAN OCEAN

treme shortage of shipping made it uncertain as to when ground crews and maintenance facilities could be sent, but it was hoped that the resources of Australia and personnel evacuated from the Philippines would make it possible to operate the planes "pending the arrival of necessary maintenance units."¹⁸

By early January the plan had been revised to provide only four pursuit groups in addition to one light, two medium, and two heavy bombardment groups.¹⁹ But such a revision in the over-all objective was by no means so significant as a general policy of throwing into the battle for the Netherlands East Indies every available tactical plane and crew in the hope that, despite the obvious disadvantages under which they would be required to operate, they would serve to slow up if not to stop the main Japanese drive. The British and American staffs in Washington remained unshaken in their decision to regard Germany as the first and most dangerous enemy, but as the U.S. chiefs pointed out, the continuing advance of the Japanese argued "for subordinating everything in the immediate future to the necessity for getting reinforcements into the ABDA Area."²⁰ It proved impossible to keep the schedule for the ferrying of bombers; but by 6 January, 20 B-17's and 6 LB-30's were en route, an additional 45 B-17's and 9 LB-30's were making ready for the take-off, and arrangements were being made to forward a total of 160 B-17's and LB-30's as rapidly as they came off the production line.²¹ Hopes for expediting their movement were raised when 3 B-17's piloted by Maj. Kenneth B. Hobson and Lts. Jack W. Hughes and Clarence E. McPherson completed the first flight from Hawaii to Australia by way of the as yet unfinished South Pacific route by 12 January, though until the fall of Java the Atlantic and African air routes would remain the chief reliance for reinforcement of the Far East.²² The total number of P-40's reaching Australia from the United States had been raised by 25 January to 112, and 160 more arrived within the next ten days.²³

Meanwhile, the staffs in Washington struggled with the problem of shipping. The heavy bomber could be flown to its battle station half-way around the world, even though the air routes it followed were imperfectly charted and prepared and losses in transit up to 25 per cent were at times sustained, but other planes must be carried by water. Water transport was required, too, for the ground crews and other maintenance personnel, for the men and materials required to construct and maintain bases, for antiaircraft and other ground forces

for defense of the bases, and for the varied machinery and equipment upon which an air force depends.* a review of shipping priorities brought a decision to reduce the size of a convoy scheduled to sail on 15 January for Northern Ireland and Iceland with the result that room was provided for 10,000 ground troops for New Caledonia, a key point in the defense of sea and air routes through the South Pacific, and for more than 11,000 troops to serve as "ground staffs" for AAF units in Australia. Shipping difficulties were further eased by arrangements made with the British for use of the *Queen Mary* and the newly built *Queen Elizabeth* as troop transports, their service from New York and San Francisco, respectively, to begin early in February.²⁴ But such measures could be effective in a defense of the Netherlands East Indies only if the interim expedients resorted to proved sufficient to hold the enemy for a while.

Among the efforts to strengthen Allied defenses immediately was an attempt, in addition to the ferrying operation, to provide air transport from the United States of urgently needed equipment and supplies. A contract on 31 December with Pan American Airways sought an extension of its transport services from Khartoum to Darwin. To accomplish this, it was necessary for Pan American to negotiate contracts with foreign airlines, particularly with Knilm, a Dutch company, and with Qantas of Australia; and the organization of an effective service required time—more time than events allowed. The effort proved to be more important for its contribution to an extension of air transport from Africa to India, from where this modern aid to logistical mobility would play a major role in the later operations of the China-Burma-India theater, than for the assistance now provided for the ABDA forces. Within the theater itself an important step toward overcoming some of the more difficult problems of transportation and communication was marked by activation on 28 January of the first American air transport unit in Australia. None of its original complement of fourteen officers and nineteen enlisted men had been trained for transport operations—they were just the men who happened to be most readily available. Equally miscellaneous were the aircraft assigned to the unit: two old B-18's and one C-39 which had been flown down from the Philippines and five new C-53's recently arrived from the United States. On 4 February, Capt. Paul I. Gunn, formerly manager of the Philippine Airlines and as "Pappy" Gunn

* See above, p. 243.

already a legendary figure in the Southwest Pacific, was placed in command. Four days later the organization, now based at Archerfield near Brisbane, was strengthened by the addition of ten officers and ten enlisted men, all of whom had been trained for transport operations.²⁵ To Gunn's command there were also added three B-24's sent from the United States for service as transports.²⁶

Brisbane continued to be the focal point of military activity based on Australia. It was the port of entry for shipments from the United States and it was the headquarters of USAFIA, whose responsibility in January became chiefly that of preparing air units for combat. In addition to unloading and assembling the planes as they arrived from America, providing for such repair and maintenance facilities as proved possible, and improvising training programs suited to the peculiar requirements of the theater, the command at the same time was forced to give its attention to plans for future development and organization. The facilities made available by the Australians at Amberley and Archerfield, both outside Brisbane, were seriously inadequate in view of the expected reinforcements; accordingly, an Allied administrative planning committee early in January authorized the establishment of a depot for the erection of planes at near-by Eagle Farm. Construction of a runway and hangar facilities there was soon under way, as were also preliminary surveys for extensive construction at Darwin and Townsville.²⁷ But these preparations, like the dispatch of reinforcements from the United States, would require time for completion and would be delayed by the necessity of fighting while preparing to fight.

Bomber Operations from Java

Meanwhile, the Japanese were moving their forces into position for penetration of the Indies. The Second and Third fleets of the Japanese navy, supported by land-based naval air elements, carried the main burden. Most of the Third Fleet, after its success in the Philippine landings, had returned for repair and refueling to Formosa, whence the main body promptly proceeded to Davao in Mindanao for a rendezvous with other units from Palau, then moved on to Jolo, an island lying between Mindanao and Borneo, which was reached on or about 6 January. The 23d Air Flotilla of the 11th Air Fleet had already moved into Jolo before the end of December. The 22d Air Flotilla,

which had participated in the attacks on Britain's ill-fated *Repulse* and *Prince of Wales*, was standing by at Saigon with 100 or more planes. According to one postwar Japanese account, the remainder of the 11th Air Fleet—presumably the 21st Air Flotilla and headquarters detachments—moved to Davao during the first week in January. The major portion of the Second Fleet, having participated in early operations off both Malaya and the Philippines, was at Formosa from 25 December to 15 January. The enemy's strategy called for the simultaneous advance of two task forces: an eastern invasion force would move down through the Molucca Sea to occupy Manado, Kendari, and Makassar in Celebes and points on Amboina and Timor; a western force supported by the 23d Air Flotilla would advance through Makassar Strait to effect, initially, the occupation of Tarakan, Balikpapan, and Bandjermasin on the eastern coast of Borneo.²⁸ While land and air forces based on Thailand moved forward to the conquest of Singapore, a third amphibious task force, supported by carrier-borne aviation, would establish a strategic outpost to the east at Rabaul in New Britain.

To get within closer striking distance of the enemy's ominous concentrations, ten of the fourteen B-17's which had been withdrawn to Australia—all that were then in commission—had by 1 January moved their base of operations to Java. It had been contemplated at the time of their withdrawal from the Philippines that they might eventually operate from Java, and General Brereton on his way to Darwin had consulted with Dutch officials on this and other questions. The choice of an American bomber base in Java had fallen on the Singosari airfield, located approximately five miles northwest of Malang. The field lacked paved runways, radar defenses, and anti-aircraft equipment, but its sod, which extended some 5,000 feet in length, apparently was firm enough and quarters were adequate.²⁹ Headquarters of the Far East Air Force remained in Darwin under Col. Francis M. Brady during days devoted by General Brereton chiefly to consultation with Australian, British, and Dutch officials; not until 14 January would Brady move the headquarters to Java, and another week would elapse before the final selection of Bandoeng as its location.³⁰ But throughout the NEI operations, and indeed for many months thereafter in the Southwest Pacific, it would not be uncommon for the tactical commander at the lower echelon to operate his planes with an extraordinary degree of independence of higher headquarters; problems of distance and

inadequate communications frequently left no choice but to send him out with a general directive and leave him on his own.

In immediate charge of the bombers at Malang was Col. Eugene L. Eubank of the V Bomber Command. From Malang it was 1,500 miles to Davao, the first target chosen. To operate at this distance it would be necessary to stage through an intermediate base, and of possibilities at Kendari in Celebes and Samarinda in Borneo, the latter was selected. Storms and low visibility forced postponement of the initial mission, but on 3 January nine B-17's reached Samarinda from Malang. Maintenance personnel, who had flown up with the aircrews, then serviced the planes, loaded each with 2,000 gallons of 100-octane gasoline and four 600-lb. bombs, and in the early morning of the following day Maj. Cecil E. Combs led eight of the big planes off the field. He headed for Davao Gulf, 730 miles away, which harbored at the time approximately twelve enemy transports and perhaps twenty-four warships. As the bombers approached the objective after five hours of flight, they climbed to 25,000 feet and from this altitude scored hits which possibly sank a destroyer and, according to enemy accounts, severely damaged a cruiser. Opposition was slight, and four hours later the B-17's landed unharmed at Samarinda. The planes returned to Malang on 5 January.³¹

Such were bombing operations during the early phase of the Netherlands East Indies campaign. Three days of flying had been required to drop less than ten tons of bombs. The flights were made from unfamiliar and inadequately equipped bases, over areas that were imperfectly charted, and under circumstances which imposed at all times a maximum strain upon personnel.

In selecting an advanced staging point for missions, attention had to be given not only to the location and condition of the field but also to the availability there of adequate stores of fuel and ammunition. The one mission through Samarinda had exhausted the supply of 100-octane gasoline at that base; moreover, the field's unpaved runway could be used by the heavily loaded aircraft only in dry weather. Accordingly, for a second mission to Davao it was decided to stage through Kendari, where a store of fuel and generally more satisfactory facilities existed. Nine of the B-17's having left Malang on 8 January, Major Combs led them from Kendari on the following day in a second mission against enemy shipping in Davao Gulf. But mechanical difficulties plagued the flight; of the nine planes, only five succeeded in

reaching the target area; and with visibility poor, their bombing runs brought only uncertain results.³²

By this time the Japanese had begun their southward move. Tarakan fell on 11 January, and on the same day enemy forces, including paratroopers, landed at Manado in upper Celebes. Small Dutch garrisons resisted as best they could, but naval units which might otherwise have helped to provide some semblance of a striking force were on convoy duty to the west, and available air forces were equal only to a token defense. Australian Hudsons, based on Boeroe and Amboina, American PBV's, and Dutch planes struck at the enemy in Celebes, but such hits as were scored left the enemy force uncrippled, and in the face of stiff resistance serious losses were sustained by the Allies.³³ Against Tarakan on the day of its occupation, Major Combs led a mission of seven B-17's; but in heavy wind and rain four of the seven were forced to turn back before reaching the target, and the remaining three, after a fight with enemy pursuits in which two Japanese planes were shot down, found the visibility too poor for accurate bombing.³⁴

The Japanese were now halfway down the Malay Peninsula on their advance to Singapore, and the next mission of the B-17's was flown on orders from the newly established ABDA Command against the recently captured Sungei Patani airfield on the west coast of the peninsula, a thousand miles west of their latest target at Tarakan. The distance from Malang again was 1,500 miles, a factor which required the use of an intermediate field at Palembang in Sumatra. Seven B-17's, once more led by Combs, flew from Malang to Palembang on 14 January. Equipment for service of the planes there proved to be seriously inadequate, and experienced maintenance personnel were lacking. The take-off of the planes on 15 January was delayed by difficulty in refueling and in fuzing unfamiliar Dutch bombs, which alone were available.³⁵ Storms buffeted the planes on the 750-mile flight from Palembang to Sungei Patani, and two were forced to turn back. The other five proceeded, relatively free of enemy pursuit and antiaircraft interference, to make several bomb runs over the target during which more than twenty hits and several resulting fires were observed. The bombers returned that night to the Lhoknga emergency field in northern Sumatra, from which they flew to Malang the following morning. On this 3,000-mile mission, the only loss was one B-17 damaged beyond repair when landing on rain-soaked Singosari.³⁶

In the absence of Combs and the B-17's, four LB-30's and six B-17's

flown by crews of the 7th Bombardment Group had arrived at Malang. This was the group that was originally scheduled, and which in fact had actually begun its movement at the time of Pearl Harbor, for reinforcement of the Philippines. Its ground echelon had reached Brisbane in the convoy arriving there on 22 December. The advance element of its air echelon had flown into Hawaii in the midst of the Japanese attack of 7 December. Caught thus in movement, its personnel and planes were put to work as the occasion demanded on the western coast of the United States, in Hawaii, in Australia, and in Java, and the unit itself with some of its original personnel finally wound up in India and China. Two of the B-17's arriving at Malang, piloted by Maj. Kenneth B. Hobson and Lt. Jack W. Hughes, had participated in the first flight from Hawaii to Australia over the newly opened South Pacific air route. The other planes had come from the United States by way of the South Atlantic, Africa, the Middle East, and India.

Five of the newly arrived planes—three LB-30's and two B-17's—were put immediately into operation. American commanders were especially concerned over the enemy's progress north of Java. With the capture of Manado and Tarakan, Japanese land-based aviation could operate from fields lying within 350 miles of both Kendari and Samarinda and thus, not to mention other obvious dangers, could impose still further limitations on our own air operations. And so on the morning of 16 January, the day of Combs' return from Sumatra, the five recently arrived planes took off from Malang for a mission against shipping in Manado Bay and against the Langoan airfield, twenty miles south. Having staged through Kendari, the LB-30's were led by Maj. Austin A. Straubel in an attack on the airfield, while the B-17's made their runs over the bay. Enemy pursuits reacted vigorously, and subjected the inexperienced American crews to continuing attacks. Lt. John E. Dougherty crash-landed his badly damaged LB-30 on a tiny island off southern Borneo where the crew, three of whom had been wounded, was stranded until rescued eight days later by a Navy PBV. Another LB-30, piloted by Lt. W.E. Bayse, had also received serious hits and was damaged beyond repair in a forced landing at Makassar in southern Celebes.³⁷ Only one LB-30 and one B-17 returned to Malang. The other B-17 had managed to reach Kendari on the way back, but Japanese pursuits repeatedly attacked the field and the American crew, unable to effect necessary repairs, finally destroyed the plane.³⁸

It was now evident that the Japanese were in a position to deny the Americans the use of Kendari as a staging base. Accordingly, the bomber command determined to try next a shuttle mission from Malang to Del Monte and return. Although this would require a 1,500-mile flight in each direction through an unpredictable equatorial front and over strongly held Japanese areas, it would permit a two-way bombing of targets between Java and the Philippines; and an additional argument for the attempt lay in the opportunity it would afford to carry ammunition into Mindanao and to evacuate some of the experienced personnel of the 19th Group waiting at Del Monte. On 19 January, Lt. John B. Connally, a veteran pilot of the 19th, led nine B-17's off the field at Malang. Three of the less experienced crews turned back, but the remaining six fought their way through severe thunderstorms to bomb shipping targets near Jolo and arrived safely at Del Monte. The weather shut out Jolo and hindered the bombing of other targets on the return trip, but all six planes had returned to Malang by noon of the 20th, bringing 23 officers of the 19th Group as evacuees from Mindanao.³⁹

Punishing as were these long flights over unfamiliar seas and through generally unfavorable weather, the crews between missions were forced to turn their hands to exasperatingly difficult tasks of maintenance. There were only a few trained mechanics to help and almost no spare parts, and men had to work with tools both inadequate for the job and insufficient in number. The older planes were rapidly wearing out; some of the newer ones arrived, after a 12,000-mile ferry flight, badly in need of overhaul; and to the mechanics, the unfamiliar LB-30 presented its own peculiar problems. Spare parts with which the planes left the United States had all too often been used up along the way.⁴⁰ Especially welcome, therefore, was the evacuation from Del Monte on 22 January of thirty-nine enlisted men together with two officers, and news that on the 19th the ground echelon of two squadrons of the 7th Bombardment Group had left Australia for Java. Encouraging, too, was the assignment of approximately 100 men of the 2d Battalion of the 131st Field Artillery on temporary duty with the bomber command, and the promise that at least some of them would soon display the American's vaunted aptitude for things mechanical.⁴¹

The arrival of new planes—fifteen more B-17E's and four LB-30's, three of the latter by the Pacific air route, would reach Java by 1

February—made it possible to send some of the B-17D's of the 19th Group down to Australia for a depot overhaul. The imminent arrival of ground crews of the 7th Group also helped to make possible the occupation of a new base at Jogjakarta, 150 miles west of Malang. Preparations at the field, occupation of which would eliminate a dangerous concentration of all American bombers at one base, were near enough completion to permit reception of the first of the 7th's ground crews there on 21 January.⁴² Thereafter, the 7th Group officially was based at Jogjakarta while the 19th remained at Malang.

But as the Japanese pressed forward the Americans were given no opportunity to get set. The main body of the enemy's Second Fleet had moved out from Formosa en route to Palau, where it joined elements of the carrier force which struck Pearl Harbor on 7 December. The 21st Air Flotilla was moving forward to bases in Celebes, and the increasing tempo of enemy air attack carried its warning of an intended advance through Makassar Strait and the Moluccas.⁴³

At the same time, the Japanese sought an eastern anchor for their advancing lines at Rabaul in New Britain. On 20 January more than 100 carrier-based planes struck at Rabaul, and others promptly hit Kavieng in New Ireland. The attacks were repeated the following day. To oppose these assaults the Australians had scarcely a half-dozen virtually unarmed Wirraways, an observation plane of slow speed and thin armor. In actions which testified chiefly to the valor of the Australian airman, these Wirraways were quickly destroyed. A few Hudson bombers escaped from the Vunakanau airfield, at Rabaul, in advance of a Japanese landing on 23 January which promptly overran the weak defenses of the town. Most of the Australians standing guard there were captured or killed, and those who escaped did so by taking to the jungle. Simultaneously, Kavieng was also occupied. By the end of the month, enemy land-based bombers and fighters, along with a unit of float planes, had taken up their base in the Bismarck Archipelago.⁴⁴

Above Java the Japanese met stronger, though hardly effective, resistance. On 24 January four American destroyers created momentary havoc among transports landing enemy troops off Balikpapan, sinking at least four of them, but the Japanese had won the place by 25 January.⁴⁵ AAF bombers struck at enemy shipping, too, and at widely separated points. Between 22 January and 3 February, excluding reconnaissance flights, at least fifteen missions representing eighty-

four heavy bomber sorties were dispatched. But of these, four missions involving a total of seventeen bombers were abortive because of unfavorable weather, and twenty-nine sorties in six other efforts resulted only in negative reports. On the remaining five missions, claims were entered for the sinking of two transports and two other vessels, but bomber losses were high. On 22 January, one B-17 was destroyed when it overshot the field at Palembang; two days later, three B-17's were badly shot up by enemy aircraft; on 24 January, two B-17's of an eight-plane mission were lost in crash landings, and only three of the eight returned safely to Malang. On 27 January, Maj. Stanley K. Robinson, commander of the 7th Group, while leading his fifth mission within a week was shot down and with his entire crew was killed when thirty Japanese pursuits attacked the formation of four B-17's.⁴⁶ Among the missions flown were those of 28 and 29 January against Kuala Lumpur and the Kuantan airfield in the Malay States by four B-17's which staged out of Palembang. Though their absence of two and a half days from Malang still further weakened the defense against the enemy above Java, the planes apparently succeeded in scoring numerous hits on runways and hangars at Kuantan.⁴⁷

The enemy on 26 January had captured Kendari, and to that point he promptly transferred the forces of the 21st Air Flotilla which on 3 February opened the attack on Java itself by savage strikes at Soerabaja, Madioen, and Malang.⁴⁸ On that day near Malang the Japanese caught American bombers standing on the Singosari field loaded for take-off, and while enemy bombs tore the runway, strafers concentrated their fire on the planes. Four B-17's exploded or burned, and a fifth was shot down ten miles south of Malang. At Soerabaja another Japanese formation damaged Dutch naval installations; destroyed three Catalinas on the water; and in shooting down a B-18, killed in addition to its entire crew several sorely needed radar experts and Major Straubel, who had recently succeeded to the command of the 7th Group.⁴⁹ The damage at Madioen was less serious, but the outlook for a defense of Java against similar and continuing attacks was dismal indeed.

In the absence of radar equipment, the Dutch air warning service depended upon ground observation stations connected by wire with a control room at Soerabaja. It had been well organized, but of course there could be no substitute for modern equipment. There was a great shortage also of antiaircraft guns, which for the most part were con-

centrated in and around Soerabaja.⁵⁰ As for the interception of enemy planes, preparations again had fallen short. The Dutch pursuits were obsolete, and half of them were destroyed or put out of action by the close of another day. Only a handful of the American P-40's had reached Java from Australia, the first having come in on 24 January. Based at Blimbing below Djombang, the American pilots received a warning twenty to twenty-five minutes in advance of the enemy's approach to Soerabaja, but by the time their P-40's had taken off and climbed to 21,000 feet the damage had been done. Although two Japanese planes were shot down at the cost of one American plane, the enemy had come, done his work, and departed with little injury to himself.⁵¹

The Problem of Pursuit Reinforcement

Plans for the organization and deployment of American pursuit forces in the Netherlands East Indies had engaged much of the time and attention of U.S. officers at Brisbane and of headquarters in Washington throughout January. Australian and Dutch forces were weak; British units were committed in the western part of the ABDA area. There were problems of reconciling the urgent claims of NEI operations with the no less urgent concern of Australian authorities for the immediate defense of their own territories.⁵² As the crucial battle for Java opened, the hope was to deploy a total of nine squadrons in the ABDA area in addition to providing three other squadrons which would operate under Australian control for a strengthening of the defenses of northeastern Australia and of Port Moresby in New Guinea.⁵³

Allied plans had contemplated deployment of pursuit units at Koe-pang, Amboina, Kendari, Samarinda, Soerabaja, and Batavia, but those were days when staffs frequently completed a plan only to find that the latest report of enemy action had already outdated it. They were days, too, of only the earliest beginnings of the American effort in Australia, where no well-established base was ready and organized for the purpose of pushing through reinforcements for the battle line but, instead, hastily assembled staffs and forces improvised an organization as they went. The emphasis in Washington naturally had been placed on speed in getting out to the Southwest Pacific all assistance that could be provided, and the need for speed often led to confusion. Inventories and manifests for shipments made were at times imper-

fectly drawn; a unit and its equipment might arrive separately and with a considerable time interval to add a further complication. Vital parts and tools might be missing or else it would require time to locate them, and once found, they might prove defective or damaged in transit with no nearer source of resupply than America.⁵⁴ To assemble the planes, reliance perforce was placed in large part upon inexperienced and untrained personnel; ground crews of the 7th Group, a heavy bomber unit, erected 138 P-40's between 23 December and 4 February.⁵⁵ A shortage of Prestone continued to be a delaying factor, for the Australian supply was limited and it took time to transport an adequate supply from the United States.⁵⁶ The pilots sent out, moreover, were considered insufficiently trained for the operations they would be required to undertake, and veteran pilots evacuated from the Philippines took over the task of whipping them into shape through an improvised training program that was marked by a high rate of accident.⁵⁷ Under the War Department's policy of shipping out men and planes as they became available, it was necessary to provide for them a provisional organization in the theater. Five provisional pursuit squadrons—the 17th, 20th, 3d, 33d, and 13th, respectively commanded by Maj. Charles A. Sprague, Capt. William Lane, Jr., Capt. Grant Mahoney, Maj. Floyd Pell, and Lt. Boyd D. Wagner—were organized and manned by casual pilots.⁵⁸

Activation of the 17th Squadron (Prov.) was authorized on 10 January, when Major Sprague received directions to select in addition to the pilots three radio men and one mechanic, one armorer, and one crew chief for each plane from those available in Brisbane. On 16 January, the flying echelon of the newly organized unit, headed by Major Sprague and composed of twelve other pilots who had fought in the Philippines and four second lieutenants recently arrived from the United States, left Brisbane for Darwin on the way to Java. Guided by two Australian planes, they flew the 2,000-mile route overland by way of Rockhampton, Townsville, Cloncurry, and Daly Waters. Accidents delayed three planes en route, and one of the P-40's was completely "washed out" in a landing, but all save this one had come in at Darwin by the 18th.⁵⁹ From Darwin they took off on the 22d for the 540-mile hop across the Timor Sea to Koepang, escorted by an Australian two-engine Beechcraft. The next leg carried them to Waingapoe on Soemba Island, whence, no longer united in one flight and some of them without escort, they flew the 500 miles across

water and land to Soerabaja, where thirteen of the original seventeen planes had arrived by 25 January. For five days thereafter the squadron remained at Soerabaja, engaging in flights and other activities designed to acquaint the pilots with the peculiar problems of local air defense. Two days before the Japanese opened the attack on Java the 17th had occupied its permanent base at Blimbing. The field, sometimes known as Ngoro, had two 4,000-foot runways surfaced with smooth sod. Taxiways, offering natural advantages for camouflage, were cut into the surrounding jungle.⁶⁰

When the Japanese attacked Soerabaja on 3 February, no other American pursuit planes were nearer than Darwin. The second provisional pursuit squadron to be activated in Australia, the 20th, had received orders on 24 January to move with eighteen P-40's to Port Moresby, a key point in defense of the approaches to northeastern Australia. This order undoubtedly reflected the concern of Allied officials over the Japanese occupation of Rabaul, which had been effected the preceding day and which gave a new urgency to the problem of providing for the security of sea and air routes joining Australia to the United States. Within another three days, however, the fall of Kendari had emphasized the immediate urgency of the need in Java, and in accordance with representations from General Brett the orders were changed. The 20th would move up to Darwin and thence would proceed to Java.⁶¹ But it was 4 February before thirteen of its pilots, most of whom had reached Australia during January as personnel of the 35th Pursuit Group, lifted their P-40's from a field at Darwin and under the escort of a B-24 headed for Timor. This leg of the flight, difficult enough for the short-range P-40 even under the best of conditions, on that day presented the additional hazard of tropical thunderstorms. The planes got through to Koepang, however, and on the following day twelve of them were able to proceed to Bali.⁶²

Fearing a Japanese attack on the field there, Captain Lane ordered his planes into the air as soon as they had been refueled. When seven of them had taken off, approximately twenty enemy planes were spotted overhead; three other P-40's then hastily took off; and all were immediately engaged by the enemy. Lt. Gene L. Bound destroyed an enemy plane, but his own was so badly shot up that he had to bail out. Lts. William L. Turner and C.L. Reagan were forced into crash landings, the former having previously shot down one of the enemy. Lt. Larry D. Landry was killed early in the flight, and Lt. Paul B.

Gambonini, who had taken off with a partially filled fuel tank, landed back at the field in the midst of a bombing attack. Together with several other aircraft on the ground, his plane was destroyed. Captain Lane, having accounted for one of the enemy, succeeded in reaching Java, where three others of the flight joined him. Within two days, an additional eight P-40's of the same squadron had negotiated the ferry route with better luck, but two had crashed on the way.⁶³

On 11 February nine more P-40's, belonging this time to the 3d Pursuit Squadron, came into Java. The first attempt by the 3d Squadron to move some of its planes through had ended in disaster. An initial flight of nine P-40's, accompanied by three A-24's of the 91st Bombardment Squadron (L), had flown out from Darwin on 9 February under the escort of an LB-30 only to find Timor closed in by storm clouds. The LB-30, having the necessary range, turned back to Darwin, but the P-40's had no choice but to go on to forced landings in which they all crashed. The luck of the A-24's proved only slightly better; they succeeded in landing at Koepang but were mistaken for enemy aircraft, and all were badly damaged by antiaircraft fire. One of them, the first A-24 to reach Java, was able to fly on the next day, but the other two returned to Darwin for repair. With favorable weather, Captain Mahoney, squadron commander, left Darwin on the 10th with the second flight of P-40's, which reached Soerabaja on the following day without mishap.⁶⁴

Like the survivors of earlier flights, the new planes were immediately incorporated into the 17th Pursuit Squadron under command of Major Sprague. Little or no difficulty was experienced in achieving an effective squadron organization, but co-ordination between its own headquarters and the Dutch interceptor control remained imperfect. Two Dutch officers and a radio detail had been attached to the squadron to facilitate a proper liaison, but the inadequacy of aircraft warning and communications facilities created obstacles which could hardly be overcome by even the most cordial of personal relations. In an attempt to improve the situation, Maj. W.P. Fisher, former squadron commander in the 19th Bombardment Group, on 16 February was placed in command of interceptor control.⁶⁵ Though attrition had taken its persistent toll, the 17th Pursuit now stood at the peak of its strength. Even so, it was far from equal to the task confronting it, and there seemed to be no prospect that an adequate interceptor force could be built up in Java. Indeed, it had not been anticipated that the

planned deployment of American pursuit units could be completed before late March, and every indication was that by then the fate of Java already would have been sealed.

Japanese Encirclement of Java

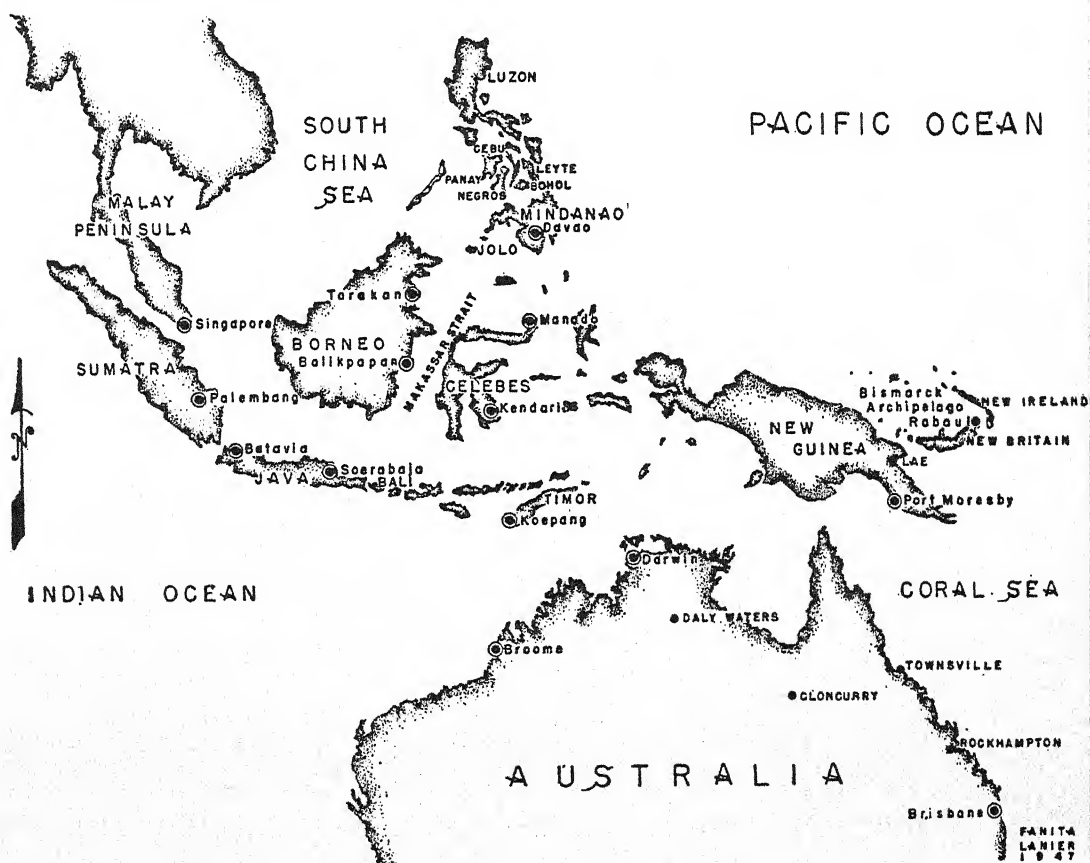
On 15 February Singapore fell. Already the enemy held virtually all areas of strategic importance in Borneo and Celebes. He was slowly but surely eliminating a courageous Australian garrison on Amboina, where the Japanese had landed on 31 January. After an Allied naval force of four cruisers and seven destroyers had been driven back in Makassar Strait on 4 February, the enemy's strength in the air had restricted efforts by naval units of the ABDA Command almost entirely to night operations. The invasion of Sumatra began on 14 February with a paratroop drop at Palembang, where on the following day a reinforced enemy controlled both the town and its airfield. The enemy was closing in on Java, and there was little if any prospect of wresting from him that air superiority which on all sides prepared the way for his advance.

Indeed, General Brett already had suggested to the War Department the necessity for prompt attention to the probability that only through Burma and China and along a line extending northward from Australia would the Allies be given an opportunity to strike back. Fitting his actions to his words, he had sent Brady to Burma for a survey of facilities, supplies, and munitions, and had called on General Barnes in Australia for pertinent study and report.⁶⁶

Reinforcements for the bomber command continued to come in; five B-17E's reached Java by way of the Atlantic route during the first week of February and two LB-30's by the Pacific. In two LB-30's, twenty more officers and men were evacuated from Mindanao, and by submarine four officers reached Java from Corregidor.⁶⁷ But foul weather and enemy interception thwarted all attempts to bomb targets of importance for ten days after 2 February. The major effort was made on the morning of 8 February, when Capt. J.L. Dufrane led out nine B-17's in an attempt to strike back at Kendari. The weather provided a cloud cover that appeared inviting but actually contained so much turbulence as to make flying in formation almost impossible, and about halfway across the Java Sea the Americans were set upon by nine to twelve enemy fighters. In what the survivors agreed was the best-executed attack yet encountered, the Japanese concentrated first

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on Dufrane's plane, which almost immediately burst into flame. Only six of the crew succeeded in bailing out. Capt. Donald R. Strother having moved into the lead, the enemy's fire in a second attack knocked out one engine, damaged another, and blew out the hydraulic system of his plane. Again the Japanese made a frontal attack, and this time the plane piloted by Lt. William J. Prichard, who had arrived from the United States just two days before, burst into flames and exploded. Three other planes sustained serious damage as the fight continued. Finally, what was left of the flight turned back; only three of the original nine planes returned to their base. Though five of the Japanese had been shot down, the enemy planes had shown superior qualities. Moreover, the top turret of the B-17 had been unable to cope with head-on attacks, the .30-cal. machine gun in the nose had lacked sufficient range, and the bottom turret had failed to prevent attacks



from below on vulnerable bomb bay tanks.⁶⁸ Such lessons of experience would prove of great value to the AAF in later days of the war, but there was little comfort for those who provided the experience.

The weather continued bad, the fields were muddy, and mechanics worked for twenty-four hours at a time to keep the big planes in repair. From 9 February to the 18th, not counting reconnaissance, ferry, or courier flights, the bombers attempted a total of sixteen missions involving seventy-two B-17 and fifteen LB-30 sorties. On fifty-one of these sorties, the planes turned back, a few of them for mechanical reasons but most of them because of impenetrable weather. Of those which got through to the target areas, only a few could claim success. All too typical was the report of a flight of three bombers on 12 February that they "believed they hit a boat." Perhaps the best day came on 15 February, when five B-17's claimed one hit on an auxiliary vessel and another on a cruiser. The following day claims also were made for hits on two transports.⁶⁹ The weather was bad for the Japanese, too, but the enemy had the advantage of numbers and somehow the weather seemed to break clear over his targets more frequently than over those selected by the Americans. Lacking any advantage of numbers or of fighter escort, the bombers usually made their runs at high altitude, as standard procedure directed. The inadequate air defenses of the fields in Java frequently made it necessary between missions and during daylight hours to put the bombers into the air to prevent their destruction on the ground, a necessity which added greatly to the mounting strain on all personnel.

For low-level attack on the lucrative targets provided by the Japanese as they closed in on Java, the A-24's of the 27th Bombardment Group (L) had started a movement up from Australia on 9 February when three of the dive bombers took off in company with a flight of the 3d Pursuit Squadron. As already recorded, only one of these three, that flown by Capt. Edward N. Backus who commanded the 91st Squadron, reached Java, but eleven others headed out over the Timor Sea from Darwin on 11 February in what was destined to be the last ferry flight by short-range planes from Australia to Java. The flight, having lost one plane by crack-up at Waingapoe on Soemba, arrived late in the afternoon of 12 February at Modjokerto in Java where, approximately 100 miles west of Malang, a new airfield was under construction.⁷⁰ On land formerly given over to rice fields, some 1,200 natives had laid a base of bamboo matting which then was covered

with a four-inch layer of soil to provide a usable though sometimes boggy runway. Local Dutch residents opened their homes to the Americans, who had not enjoyed such "good baths, good food, good whiskey, good beds" since leaving the United States. But there were only two mechanics available for upkeep of the planes, and for four days the crews worked from dawn to late at night getting their planes into shape. For parts, they cannibalized one of the aircraft, and they lost still another when it came down in Soerabaja Bay. Then after a week of preparation at Modjokerto, the remaining seven planes flew to Malang to secure adjustment of shackles and adapters for use of the Dutch bombs.⁷¹ There on the fateful 19th of February they were ready for operations.

The honor of carrying out the initial low-level bombing attack had already gone to the pursuit planes of the 17th Squadron. Two days earlier, on 17 February, eight of the P-40's had flown seventy-five miles to Madioen to pick up a bomb load of four 20-kilogram bombs per plane. Another hop, this time of 325 miles, brought them to Batavia, whence they flew 275 miles across the Java Sea for a bombing and strafing attack on Japanese shipping and aircraft in the region of recently captured Palembang. Though the weather favored the attack, Japanese fighters intercepted so spiritedly that only three of the American planes were successful in breaking through to the targets. Bombs were dropped among enemy landing barges, and the Americans accounted for four of the Japanese fighters with no loss to themselves. All of the P-40's returned safely to Ngoro the next day.⁷²

That was the day the Japanese landed on Bali in an action that would effectively cut the ferry route from Australia. The prospect of this interference with plans for reinforcement of Java naturally had been a source of great concern to Allied commanders, and as early as 17 January, General Wavell had decided to attempt a reinforcement of Timor. By 4 February arrangements had been completed for strengthening the defenses of this key point along the way by sending from Australia an antiaircraft battery, most of an American field artillery regiment, and an additional infantry battalion.⁷³ But the problem of protecting from air attack the ships on which they were to be transported and other factors delayed their departure from Darwin until 15 February, when four transports escorted by the U.S. cruiser *Houston* and the destroyer *Peary*—Wavell and Brett had hoped to provide air cover—sailed for Timor.⁷⁴ Unhappily, the convoy was

soon sighted by Japanese reconnaissance planes, and the next day it was subjected to severe attack by several waves of enemy planes bombing from high altitude. All four transports having sprung leaks from near misses, ABDACOM directed that the convoy return to Darwin until measures could be taken to provide local air superiority.⁷⁵

Whatever hope may have existed of achieving this superiority ended with the Japanese landing at Bali two days later, after a series of air sweeps extending westward into Java. The Allies had little with which to resist. An unescorted formation of nine enemy bombers was intercepted on its westward sweep by pilots of the 17th Pursuit who shot down at least four of the bombers, the other five being listed as probables, at the cost of one P-40. The B-17's, having completed eleven sorties over the invasion fleet on the 19th, claimed three hits on cruisers, one on a destroyer, another on a transport, and two enemy fighters shot down. All of the American bombers returned to base. From Malang, also, two of the A-24's joined in the fight. The pilots of the 91st Squadron had completed the loading of Dutch bombs on their planes, five of which stood in revetments and two on the open field awaiting orders to attack Bali, when awhile after noon an air raid warning was received. The two exposed A-24's were ordered off the ground, and on their own initiative the pilots proceeded to Bali. Setting their makeshift sights on a cruiser and a transport, they scored hits on both targets. Indeed, reconnaissance by PBY's later indicated that both vessels had been sunk, but it has been impossible to find confirmation in enemy sources.⁷⁶ Despite these and other efforts the enemy made good his landing, speedily overran the airfield, and thus completed the encirclement of Java.

The 19th had been marked by heavy blows directed against Java from the west as well as the east. Thirty enemy fighters roared over the Buitenzorg airdrome to destroy two transport planes and three Hudsons caught on the ground. Another formation of thirty planes hit Bandoeng, where five of the few remaining Dutch pursuits were shot down and two B-17's just in from the United States were destroyed on the field. The American P-40's met with some success in breaking up a bomber formation headed for Malang. They counted no bombers shot down, but in a furiously fought engagement they destroyed four enemy fighters and lost three of their own.⁷⁷ Here and there the Allies could take pride in an individual victory, but the day clearly belonged to the Japanese.

On that same day the enemy imposed on the Allies a crushing defeat at Darwin, at the other end of the ferry route. Four of his carriers, after moving south from Palau, had waited several days near Amboina for the hour to strike.⁷⁸ Allied intelligence was not without some warning,⁷⁹ and since 15 February the newly activated 33d Pursuit Squadron had been flying patrol over the waters northwest of Darwin. On 19 February, however, its planes had been scheduled for an attempt to get through to Java. In fact, ten of the P-40's had taken off for Koepang at approximately 0900, but when they were about half an hour out of Darwin a weather report from Timor proved so unpromising that the planes turned back. On their return, Major Pell led one flight of five planes in for a landing at the RAAF field, having left the other five for patrol above.⁸⁰ Just at this point, warning came through of Japanese aircraft approaching Bathurst Island, some fifty miles away to the northwest, and before further details could be secured the radio frequency was jammed. Major Pell immediately led his flight back into the air, and at approximately 1000 an enemy force of more than fifty bombers escorted by fighters struck in an unexpected approach from the south.⁸¹

To oppose this overwhelming force there were only the 33d's pathetically few P-40's, which one after another were shot down. Major Pell was killed when forced to bail out of his plane at approximately seventy feet. Lts. Charles W. Hughes, Jack R. Peres, and Elton S. Perry also lost their lives, while Lts. John G. Glover, Max R. Wiecks, Robert F. McMahon, Burt H. Rice, and William R. Walker safely parachuted from riddled planes. Only Lt. Robert G. Oestreicher managed to bring in his bullet-punctured P-40 to a normal landing.⁸² Having thus destroyed the American interceptors in the first strike, the enemy returned two hours later with another and equally large formation which carried through its bombing runs virtually without opposition. The total cost to the enemy could not have exceeded ten planes shot down, and may have been considerably less.

On the other hand, the Allies had lost, in addition to the nine P-40's destroyed in the air, two more P-40's, six Hudsons, and one LB-30 on the ground. RAAF facilities and the commercial airport had been badly hit. Even more serious was the damage done to shipping and harbor facilities. Three American ships—the destroyer *Peary*, the transport *Meigs*, and the merchantman *Mauna Loa*—and as many other Allied vessels had been sunk. Eight more vessels sustained serious

damage. Wharves and jetties were a jumble of wreckage, the harbor was filled with debris; months would be required to restore what it had taken only a few hours to destroy. Fearful that this assault by air might be only the prelude to an invasion of Australia, the authorities ordered a partial evacuation of the town and preparations for demolition of facilities which had survived the enemy's attack.⁸³

As events proved, the blow had been struck primarily for another purpose. Possessed now of Sumatra, the Malay Peninsula, Borneo, Celebes, Amboina, and Bali, the Japanese by the neutralization of Darwin had completed the isolation of Java.

The Evacuation of Java

The Allies still disputed the enemy's landing on Bali, but the resistance there quickly came to an end. A naval force of cruisers and destroyers failed in its attempt on the night of 19/20 February to disrupt the Japanese operation, as did also the bomber command in three heavy bomber strikes executed within a few hours thereafter, though serious damage to a cruiser and the sinking of a transport were claimed by the airmen.⁸⁴ Also joining in the attack were the seven A-24's of the 27th Group, which with an escort of sixteen P-40's arrived over the Strait of Lombok at 12,000 feet and dived upon six naval vessels, releasing their bombs at from 2,000 to 4,000 feet. Captain Backus reported three hits amidships on a cruiser, and three other pilots claimed two hits apiece. Two of the A-24's were lost, apparently to anti-aircraft fire. One of them, having failed to come out of its dive, carried Lt. D.B. Tubb and his gunner to their death; the other crashed in Java, but the crew after an exciting three days made their way back to Singosari. Two of the P-40's, carrying Major Sprague and Lt. Wilfred H. Galliene, were shot down; two others ran out of fuel and crashed on a Java beach; and a fifth cracked up on landing at Ngoro. Against this toll of five planes stood a claim of four enemy fighters destroyed, three in the air and one on the ground.⁸⁵

That the enemy was not only able to stand up under these attacks but in a position to strike back with telling effect was quickly demonstrated. Within five hours after the return of the A-24's, nine Japanese fighters (unfortunately identified by Allied interceptor control as friendly) swept over Singosari to pick out in a strafing attack five B-17's which stood on the field ready for take-off in the event of an alarm. Three of them were destroyed, and the other two were

severely damaged. Two days later, one LB-30 was burned on the ground at Jogjakarta and four B-17D's at Pasirian, a dispersal point some thirty miles south of Soerabaja. On 24 February, in a severe attack on the depot at Bandoeng, three more B-17's were destroyed.⁸⁶ It was still possible for heavy bomber reinforcements to reach Java, but unless something could be done to strengthen local air defenses, obviously there was little point in further attempts to build up the bomber command.

Indeed, it had been apparent to the Allied command since the fall of Singapore that, barring some unexpected development, the Indies were lost, and by this date the evacuation of Java was already under way. To local commanders the best opportunity to continue the fight against the Japanese seemed to lie in Burma, where pilots of the already famous AVG had joined the RAF in resisting the enemy's push toward Rangoon, an advance which carried the threat of cutting off China from all outside aid. With Australian pickets above New Guinea already driven in, and with the sea and air routes to the Philippines effectively closed except to an occasional blockade-runner, submarine, or long-range bomber flight, an effort to hold open a line of communications with China appeared to offer the only hope of bringing Allied offensive power to bear on the inner defenses of Japan's now swollen empire at a relatively early date. On 18 February, General Brett advised the War Department that from his point of view the one chance of overcoming the odds against the Allies was to launch an offensive through Burma and China. At the same time, he advised that we should build up strength in Australia.⁸⁷ Already he had sent Colonel Brady to Burma, and upon receiving his report, Brett determined to "send the mass of all troops" and 160 pursuit planes to India.⁸⁸ Thinking in terms of the establishment of an American command there, on his own initiative he directed Brereton to proceed to India and made tentative plans to follow after a brief return to Australia.⁸⁹ Accordingly, in the early morning of 23 February, General Brett flew to Melbourne, and on the following day Brereton and a small staff of officers left Java in two heavy bombers for India.⁹⁰

On 23 February, General Wavell also received orders to leave Java. Three days earlier the Combined Chiefs in Washington had favored a last-ditch defense with all forces then on the island and advised that there should be no withdrawal of the forces of any nationality but,

except for aircraft, there would be no further reinforcement of Java. General Wavell was informed that he might draw on U.S. aircraft in Australia and available naval units at his discretion, but that ground forces would be held for defense of Burma, Ceylon, and Australia.⁹¹ As the situation rapidly worsened, it became evident that the limits of resistance in Java would soon be reached, that the hope even of reinforcement by air would have to be surrendered, and that decisions were required on the question of withdrawing key personnel for the direction of operations outside Java, which alone now offered promise of weakening the enemy. Attention already had been given in Washington to establishment of an American air force in India, and Brett's assignment of Brereton to that area was accordingly accepted.⁹² But General Brett himself was ordered to Australia, where, rather than in India, the Americans were to develop a major base for their forces.⁹³ In Java, General Wavell closed his personal headquarters on 25 February, at which time the ABDA Command passed to the Dutch. The decision not to dissolve the command itself was in keeping with a purpose that Allied units in Java should continue to operate as long as it was possible.⁹⁴ American aircrews for whom there were planes, together with minimum maintenance personnel, were to remain, as also would Colonel Eubank, now the ranking American air officer on the island.

The chief remaining hope of reinforcements rode with a shipment of P-40's which had left Australia on 22 February. As early as the 7th of the month, when the difficulties of the ferry route through Timor and the risk of its being cut at an early date were apparent, General Barnes had been instructed to prepare for shipment of pursuit planes by water.⁹⁵ Within two days it had been decided to send from Melbourne on 12 February four vessels carrying the headquarters and ground personnel of a bombardment and two pursuit groups and numerous service units in addition to planes. On 11 February the 13th Pursuit Squadron (Prov.), together with personnel of the 33d Squadron which had not yet joined Major Pell at Darwin, received orders to fly thirty-six P-40's across the continent to Perth in accordance with a plan to load them at near-by Fremantle on the seaplane tender *Langley* for shipment to Java in company with the four vessels on their way from Melbourne.⁹⁶

When the five ships weighed anchor and moved out from Fre-

mantle on 22 February, however, three of them, carrying most of the Army personnel, ten P-40's, and many motor vehicles, had been directed to Burma rather than to Java in keeping with a decision which had been reached by 17 February.⁹⁷ The decision had been dictated by considerations which apparently also brought into question the destination of the *Langley*, with its deckload of thirty-two fully assembled P-40's, and of another vessel, the *Sea Witch*, in whose hold twenty-seven crated P-40's had been stored. But on the day of its sailing General Wavell ordered the *Langley* to Java, and a similar order was subsequently issued for the *Sea Witch*; for shortly after sailing, the *Langley* and, sometime later, the *Sea Witch* parted company with the other ships to set a course for Tjilatjap on southern Java.⁹⁸ The *Sea Witch* got through five days later, but the *Langley* went down on 27 February—and none of the P-40's they carried survived to fight the Japanese.*

Meanwhile, the 17th Pursuit Squadron (Prov.) approached the end of its brief and tragic history. Between 21 and 26 February, its pilots claimed ten enemy planes shot down, but the unit at the same time had lost Lts. George W. Hynes, Wallace J. Hoskyn, and Gerald McCallum. On 26 February it had only thirteen P-40's in reasonable readiness to fight an enemy who, as he closed in on Java, counted his planes by the hundreds.⁹⁹ The American bombers knocked out a number of grounded aircraft at the Denpasar airfield on 22 February, "definitely sank" two transports at Makassar two days later, and on the 28th claimed the sinking of one transport and probably another off the northern coast of Java. But under conditions of increasing insecurity on the ground between missions, which added to the wear and tear on both men and machines, the bomber command sent out a total of eleven missions, or thirty-one sorties, between 21 and 28 February which could only be recorded as failures.¹⁰⁰

The last missions were flown against Japanese forces gathering for the invasion of Java. By 27 February a large enemy convoy had come down from Jolo through Makassar Strait to join the main elements of the enemy's Third Fleet, while a second amphibious force moved into position off Batavia in the west. Reports reaching the bomber command were confusing and incomplete; one transport claimed by a flight of three A-24's seems to have been the extent of the damage

* See below, pp. 398-99.

accomplished by bomber effort.¹⁰¹ Beginning that night, Allied naval forces made their bid to break up the invasion effort only to suffer one of the more serious defeats of the war.¹⁰² Enemy landings on the northern coast of Java were under way by the night of 28 February, and early on the following morning, 1 March, the last air mission of any importance from Java bases was carried out when all available pursuit planes—nine P-40's, six Hurricanes, and four Brewsters—were thrown against one of the landings. In the face of heavy antiaircraft fire, the planes attacked at low level to sink several small boats and to strafe AA batteries on shore, but the enemy took his toll. Lt. Morris C. Caldwell crashed into the sea; Lt. Cornelius Reagan was last seen in an apparently vain attempt to land his blazing P-40; another P-40 went down after its pilot had succeeded in bailing out; and of the surviving planes, all sustained varying degrees of damage.¹⁰³ Then, before any of the American planes could be made ready for a return to the air, Japanese fighters swept over the Ngoro field, which heretofore had escaped the enemy's attention, and riddled with machine-gun fire all the remaining P-40's. Thus ended on 1 March the operations of the 17th Pursuit, whose surviving personnel now joined the hurried and confused effort to evacuate Java while there was yet time.¹⁰⁴

All of the American pursuit planes which reached Java, except those aboard the *Sea Witch*, literally had been used up or had been destroyed by the enemy. The twenty-seven crated P-40's brought in by the *Sea Witch* had reached Java at the height of the confusion immediately preceding the invasion, but time did not permit their being assembled. They were finally shoved into the water to prevent their capture by the enemy.¹⁰⁵ The P-40's aboard the *Langley* had gone down with that gallant ship on 27 February. As it approached Java, two American destroyers, the *Edsall* and *Whipple*, had joined it to serve as escort early in the morning of the 27th. At approximately 0900 an enemy aircraft came over, and before noon nine twin-engine bombers with fighter escort attacked the three vessels. On the third bombing run the *Langley* received five direct hits and three near misses, and soon sank. Though two of the P-40 pilots were injured, none were killed. The survivors having been picked up by the destroyers, the wounded pilots were subsequently transferred to the tanker *Pecos*, which then headed for Fremantle with a total of approximately 670 men. It was hardly under way, however, when

enemy planes appeared overhead, and in the middle of the afternoon the *Pecos* also went down. Meanwhile the *Edsall* with the remaining pilots had headed for Java, never to be heard from again.¹⁰⁶

The evacuation of Java was already in full swing. Since 25 February all aircraft which possessed the necessary range had been pressed into service for the evacuation of military personnel not required for the operation of remaining aircraft. At Broome, on the northwestern coast of Australia, an evacuation center was hastily organized under the direction of Col. E. S. Perrin.¹⁰⁷ One by one the air bases in Java were abandoned for demolition by Dutch authorities until on the evening of 1 March Jogjakarta alone remained in Allied hands. To it had come the surviving personnel of the 17th Pursuit to be flown out that night to Broome. On the following night, 260 officers and men still awaited evacuation and only five B-17's and three LB-30's were available, but each LB-30 took off with thirty-five passengers and each B-17 carried out thirty-one. As the last plane took off just before midnight, the Japanese were only eighteen miles away, and Dutch troops stood ready to explode their demolition charges.¹⁰⁸

The eight American bombers reached Broome early in the morning of 3 March. Broome had been a major port of entry for evacuees from Java; and transport pilots were straining their endurance in an attempt to ferry one load of refugees after another down the coast of western Australia to Perth. In anticipation of an enemy attack (a Japanese reconnaissance plane had been sighted during the night), all aircraft had been warned to leave before 1000 that morning. At just that hour a crowded B-24 transport cleared the field. When it had climbed to only three or four hundred feet, approximately a dozen Japanese fighters swept in over the harbor. Their fire punctured the gas tanks of the helpless B-24, which crashed into the sea, broke in two, and all of its passengers except one enlisted man were drowned. Waiting for take-off in the harbor were several Dutch flying boats already loaded with evacuees, mostly Dutch women and children. Other ships on the airfield stood ready for take-off or were the objects of hurried preparations by their crews. The personnel on the field who reached the cover of near-by scrub bush watched every plane on the field explode or burn to the ground, and from the harbor came sounds of the destruction wrought among the helpless seaplanes. The enemy had destroyed twelve flying boats, two B-17's, two B-24's, and two

Hudsons, and had killed at least forty-five Dutch civilians and twenty American airmen.¹⁰⁹

So ended, in still another terrifying demonstration of the cost to those who allow control of the air to pass to their enemies, the air phase of the Java campaign.

For the American airmen, it had been a bitter and frustrating experience. The pursuit unit, which carried a major share of the responsibility for defense of the island, rarely had more than twenty P-40's in commission at a time. Of some 120 pursuit aircraft forwarded from Australia during January and February, only thirty-six reached their destination. Against a numerically superior and skillful enemy, the pursuit pilots shot down Japanese planes in excess perhaps of their own total numbers—claims were made for thirty-eight kills—but the battle ended with the American unit having lost literally all of its planes. Creditable as was the effort, pilots not previously seasoned in the Philippines at times showed their inexperience and a lack of adequate training.¹¹⁰

The initial trial of American heavy bombardment had proved disappointing, though it was difficult to argue that the test had been a fair one. The planes had been built for operation from fixed and well-equipped installations, and while emphasis had been laid on precision bombardment in the training of crews, standard practice called for pattern bombing by relatively large formations against targets of the sort most frequently bombed in the Netherlands East Indies. The bombers originally withdrawn from the Philippines had been reinforced by at least thirty-seven B-17's and twelve LB-30's, but some of these came late and rarely had there been more than fifteen of the big planes in commission at a time. Targets had been plentiful, in fact too plentiful, and the bomber command had been forced repeatedly to divide its attention, not always in accordance with its own choice, between varied and scattered objectives. Unfavorable weather, mechanical failures attributable to inadequate maintenance, the surprising effectiveness of enemy air defenses, the ineffectiveness of Allied air defenses, and sheer weariness—all took their toll. During January and February the bomber command dispatched approximately sixty heavy bomber missions, for a total of over 300 sorties, the great majority of them against shipping targets. Of the bombers participating, more than 40 per cent failed to reach their targets. Those getting through claimed the sinking of one destroyer, eight

transports, and two unidentified ships. The crews claimed twenty-three enemy aircraft shot down, but at the same time at least thirty-eight of our own bombers were lost—six in combat, six by accident, and twenty-six destroyed on the ground.¹¹¹

Valuable lessons had been learned or re-emphasized. Perhaps the chief of these was the necessity to provide, particularly for heavy bombers, adequate air defense of bases. The importance of camouflage, of revetments, and of the use of such devices of deception and cover as the dummy plane had received new emphasis. It was evident, however, that none of these would be enough in the absence of provision for adequate aircraft warning, antiaircraft defenses, and strong interceptor forces. It also had been found that the LB-30 was vulnerable to pursuit attack and that its performance above 20,000 feet was unsatisfactory; that the B-17 needed more range and armament, that its oxygen system possessed faults, and that it required a self-sealing bomb bay tank.¹¹² Generally, however, the B-17 crews praised their plane, particularly for its ruggedness in carrying them through and getting them back, and few of them perhaps would have denied that there was a certain aptness in a description broadcast from Tokyo which identified the big bomber as a "four engine pursuit ship, used for all purposes."¹¹³

Though the A-24 had been inadequately tested, it gave promise of effective use against shipping targets. Its principal weaknesses, a short range and insufficient armament, would require the establishment of good advance bases and provision of strong pursuit escort.¹¹⁴ The P-40 had given a good account of itself—it could outdive the Japanese fighters, was faster in level flight, and was better armored. But the enemy plane seemed to have more range, could outclimb the P-40, and was more maneuverable. For the American pilot to risk a dogfight was to flirt with suicide.¹¹⁵ Indeed, by no means least among the lessons learned was a new respect for the foe.

It could be argued perhaps that it would have been a wiser course to avoid the piecemeal commitment of our aircraft in the Netherlands East Indies, and to have held them in Australia until a respectable striking force had been built up and made ready for operation from reasonably well-established bases there. But such an argument would ignore important considerations of morale which had a bearing, among other things, on the Allied hope of rallying within Asia itself resistance to Japanese aggression. The Australians, British, and Dutch

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threw their available aircraft unsparingly into the fray. Allied ground forces fought against tremendous odds, and Allied naval forces moved resolutely to their destruction in the Java Sea. Even the token use of land-based air power undoubtedly helped to sustain the morale of one and all.

CHAPTER 11

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THE DEFENSE OF AUSTRALIA

IN THE rapid southward thrust which by the opening days of March 1942 had placed Japanese forces in control of the Malay Peninsula, of the Netherlands East Indies, and of the Bismarck Archipelago, and which had brought them to the very doors of Australia, the enemy had given effective demonstration of the type of amphibious warfare that until the B-29's began full-scale operations would dominate the struggle in the Pacific. Operating under a plan to throw overwhelming force against strategic points, Japanese landing parties had moved forward in leaps of several hundred miles at a time, preceded by submarine and flying boat reconnaissance and by light air raids mounted from the nearest land bases, and then by heavier bombing attacks with escort provided as the occasion required by carrier-borne or land-based fighters. An immediate objective of the landing parties, while overcoming such local opposition as might be met, was seizure of an airfield on which a prompt basing of fighters for defense of the invading forces was merely preliminary to the bringing in of bombers in preparation for the next move forward. Within a week of the landing, the Japanese usually had repaired or extended the facilities with the aid of local labor to permit their use by two-engine bombers.¹

The enemy's tactics, which included the device of passing by certain points of resistance in accordance with a plan to reduce them at leisure or merely to leave them to the ultimate penalties of isolation and blockade, resembled those that were to be employed later by Admiral Nimitz and General MacArthur in their offensives of 1943 and 1944. Indeed, General MacArthur had been the war's first victim of a type of warfare he subsequently would make peculiarly his own.

His air force having been defeated at the very outset, his army thereafter was besieged on Bataan and Corregidor while the Japanese swept on to effect the virtually complete isolation of all the Philippines. Except for the occupation of Davao, Mindanao was left for over three months to American troops who labored heroically to extend and improve the facilities about Del Monte in anticipation of hoped-for reinforcements. But their fate, like that of the men on Bataan, was sealed hundreds of miles to the south—at Singapore, on Java, and in the Bismarcks.

Final Efforts in the Philippines

When General Brereton's headquarters had been moved to Australia late in December, it was hoped that the partial withdrawal of our air units would be only temporary, and that provision could be made for an increasing flow of materials from the Australian base to the Philippines. Indeed, the prompt decision to send bombers to the Netherlands East Indies had been dictated in large part by the necessity to provide all possible protection for the reinforcements on which the Philippines depended. But the enemy had moved too fast, and soon there was left only the hope that blockade runners might prolong the resistance on Bataan. Vigorous attempts to provide aid by such means—attempts which included requesting Generalissimo Chiang Kai-shek to assist in a plan to run small boats from the China coast to Luzon—were made by American civilian and military authorities. Again, however, hopes were to be replaced by disappointment. Inevitably there were delays in effecting the necessary arrangements in Australia, where alone circumstances proved in any way favorable, and of the ships dispatched only three got through to the Philippines. At least fifteen others which hazarded the dangerous run were either sunk or captured. Submarines got through and heavy bombers flew in needed supplies and ammunition to Del Monte for subsequent transfer to Bataan, but the numbers available were as limited as was their capacity to carry freight.²

The prompt severance of the projected ferry route by way of Koe-pang, Kendari, and Tarakan left our pursuit forces on Luzon wholly dependent upon water shipment for reinforcement, with the result that only three P-40's reached the Philippines through the long weeks preceding the fall of Corregidor in May. These had been shipped in crates from Australia to Mindanao, where early in March they were

immediately assembled and put into operation.³ For all practical purposes, therefore, the American air forces on Luzon continued to be the remnant of the 24th Pursuit Group, which had survived the enemy's initial assault—a handful of planes and fifteen pilots, who all too aptly came to be described as the Bataan Field Flying Detachment. Brig. Gen. Harold H. George of the interceptor command directed its varied operations, supervised the maintenance of its dwindling number of planes, and attended to the training of personnel in the elementary problems existent in the field; and as the planes one by one were shot down or worn out, he selected the air and ground personnel that would be reassigned to infantry units whose rosters already included many representatives of the 27th, 24th, and 19th groups. There were problems of adjustment to unfamiliar assignments as the pilot led his ground crew against some enemy strongpoint or rallied soldiers trained primarily as mechanics to defend a bit of land that for the moment was American, but there was nothing unfamiliar about the odds to be faced.⁴

The missions undertaken by the American pilots from Bataan fields were described by General George as “the hardest and the most dangerous.”⁵ The primary task was that of reconnaissance, and of occasional patrol of the forward areas. Important, too, was the attempted defense of our own area against enemy attack. Now and again it proved possible to strafe enemy communications, and on one occasion in February even to mount a mission against Nichols and Nielson fields by seven P-40's, which in addition to strafing dropped fragmentation bombs. Filipino agents later reported loss to the enemy of fourteen planes destroyed on the ground and the killing of many Japanese. Once again, on 2 March, four P-40's, equipped with an attachment for a 500-lb. bomb designed by Warrant Officer Jack E. Bay, were led by Capt. William E. Dyess, Jr., in an attack on shipping in Subic Bay. Although one P-40 was shot down and the remaining three crashed on landing, apparently two transports had been sunk and other small boats damaged.⁶ As the Japanese blockade tightened, even P-40's were pressed into service as transport planes. In addition to an occasional mission for the transportation of medical supplies from Mindanao to Bataan, they dropped supplies to isolated units on the ground and sometimes carried passengers crowded into the baggage compartment. As malnutrition, dysentery, and malaria wore down the American soldiers, a few aircraft that were useless for com-

bat were cherished for transport purposes. For inter-island air transport, principal reliance was placed on two Navy PBY's and a motley collection of craft—"a Duck, a Bellanca, and a Fairchild," two Beechcraft, a Waco, and two decrepit P-35's—which had been dubbed the "Bamboo Fleet." But one by one these transports, like the combat planes, were lost to enemy action, to accident, or simply to wear and tear and the necessity of using for purposes of evacuation any plane that could fly to Australia. The Waco was shot down with loss of all its passengers near Del Monte; the Duck was forced down and destroyed by the enemy, as also were both of the P-35's; by the time of Bataan's fall in April, only the Bellanca was left. Flown by Maj. William R. Bradford, it made its last flight from Mindanao with a cargo of quinine for relief of the garrison on Corregidor, where it crashed in attempting a take-off for yet another mission of relief.⁷

If the Americans on Bataan and Corregidor symbolized a will to resist the Japanese aggression at all cost, those on Mindanao represented a lingering hope that reinforcements could be gotten through. Early in January, General MacArthur, who clung to the belief that even with defeat on Luzon it might be possible to build up strong forces in Mindanao preparatory to a reconquest of all the Philippines, had directed that airfields be constructed with all haste throughout the Philippine Islands. Available air base personnel were sent out to enlist the aid of local leaders and to provide supervision for construction undertaken. As a result, by 1 March the Americans had at least seven all-weather-type fields capable of receiving any kind of aircraft on Mindanao, four on Negros, three on Cebu, and one each on Panay and Bohol. In addition, there were nine fields on Mindanao, two on Negros, and one each on Panay and Leyte suitable for use by pursuit aircraft, not to mention others recommended for use only in dry weather or for an emergency landing.⁸ The most extensive effort, as the above-given figures indicate, had been made on Mindanao, where Maj. Ray T. Elsmore subsequently reported a total of forty-two fields that had been completed between the opening of hostilities and 1 April 1942. Del Monte itself had been expanded into a complex incorporating eight outlying fields, one of which had its operations control in a tunnel driven sixty-five feet into a neighboring mountain side. Another of the Del Monte satellites provided a 3,000-foot runway leading into a tunnel capacious enough to receive and park five P-40's at a time. Other bases on the island offered facilities for distribution

of both the planes and their maintenance, and a seaplane base at Lake Lanao permitted operations from Mindanao by PBY's almost to the end at Corregidor.⁹ In what must be regarded under the circumstances as considerably more than a creditable effort, the 5th Air Base Group and other personnel participating had benefited greatly by prewar plans for an early expansion of air facilities in the Philippines.

Slow and untrustworthy communications between the War Department and General MacArthur made it difficult for either to comprehend fully the other's position. The latter late in January requested of General Wavell two or three pursuit squadrons, and appeared surprised on learning that only sixteen P-40's were currently in operation within the ABDA area.* In early February, he still hoped that a carrier might bring air reinforcements within flying distance of the Philippines, or that A-24's, P-39's, and A-20's could be ferried from Australia. With the passage of time, he advanced arguments against the strategy of a build-up of forces on the enemy front, and pointed to the Japanese lines of communication as the enemy's principal weakness.¹⁰ Whatever real hope MacArthur may have held for effective resistance in the Philippines, President Roosevelt had decided early in February that the general would be evacuated to Australia. Objections based on a desire to remain with his troops were overruled, and General Brett received directions to provide three B-17's for evacuation of General MacArthur and his staff. The planes took off on 11 March, but immediately ran into bad luck. One of them promptly turned back because of engine trouble; a second crashed into the sea off Mindanao, with loss of two members of the crew; the third landed safely at Del Monte, but in poor mechanical condition. Accordingly, Maj. Richard H. Carmichael, commanding officer of the recently arrived 40th Reconnaissance Squadron, at Townsville, received instructions to prepare four other planes for this special mission. Three of the four, carrying medical supplies for our troops in the Philippines, succeeded in taking off from Australia and reached Del Monte safely. General MacArthur, his family, and key members of his staff, among them General George of the interceptor command, had escaped from Corregidor by PT boat and at Del Monte boarded the planes for the 1,500-mile flight to Australia.¹¹ The return flight was executed without mishap, though at the time of MacArthur's landing on Batchelor Field, near-by Darwin was under attack by Japanese

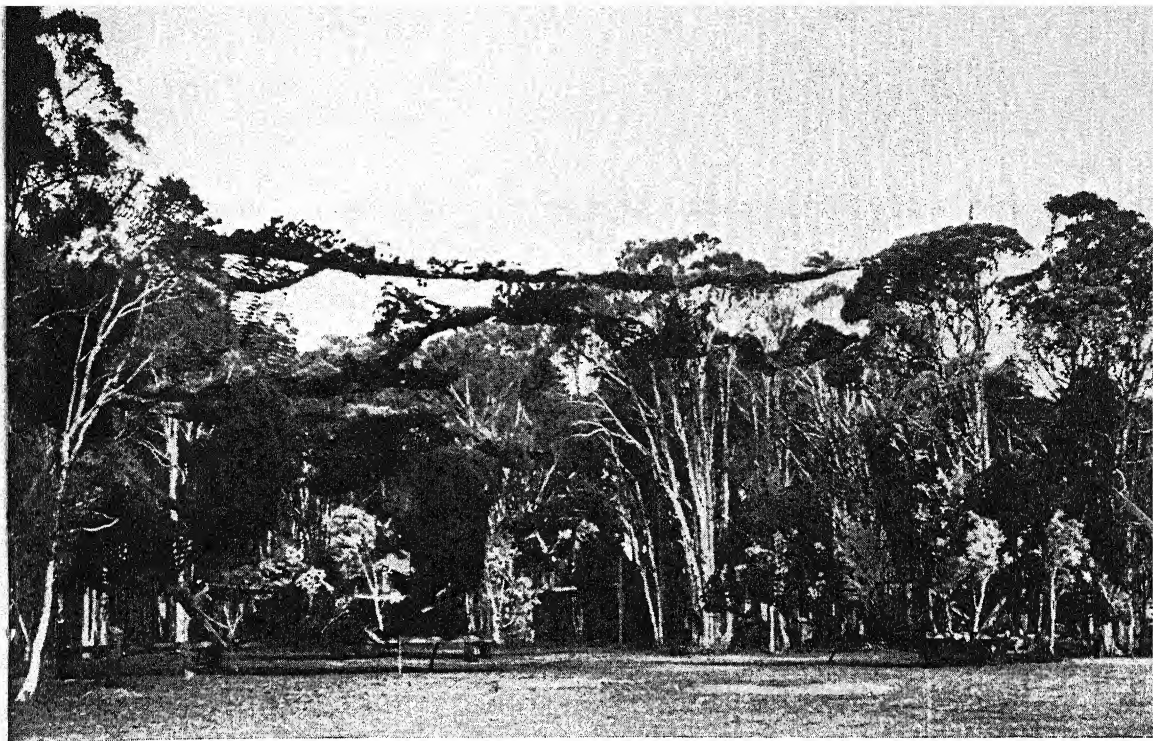
* It should be remembered that ABDA did not include Australia, except for Darwin.

planes. From Darwin the party was flown inland to entrain for Melbourne.

Air Order of Battle in Australia

The prospect General MacArthur faced in Australia was none too heartening. Japanese conquest of the Netherlands East Indies had placed enemy bombers within easy range of northwestern Australia, where Darwin had been under recurrent attack for almost a month. The occupation of Rabaul in January had been followed by air attacks on Australian posts along the upper coast of eastern New Guinea, and there on the night of 7/8 March Japanese landing parties had moved ashore to occupy Lae and Salamaua on the Huon Gulf. This move brought the enemy within 200 miles by air of Port Moresby, chief Australian outpost in New Guinea, which had experienced its first air attack early in February and would soon be the victim of repeated raids staged through Lae and Salamaua. Fortunately, the land approaches to Port Moresby were guarded by well-nigh impenetrable jungles and the alpine reaches of the Owen Stanley Mountains. Even so, when the enemy infantry pushed inland toward the Australian mining center of Wau, 150 miles above Port Moresby, some saw in the move a step toward Port Moresby itself. Allied intelligence dismissed the idea, but no one discounted the serious threat of an amphibious assault designed to give the Japanese complete control of New Guinea.

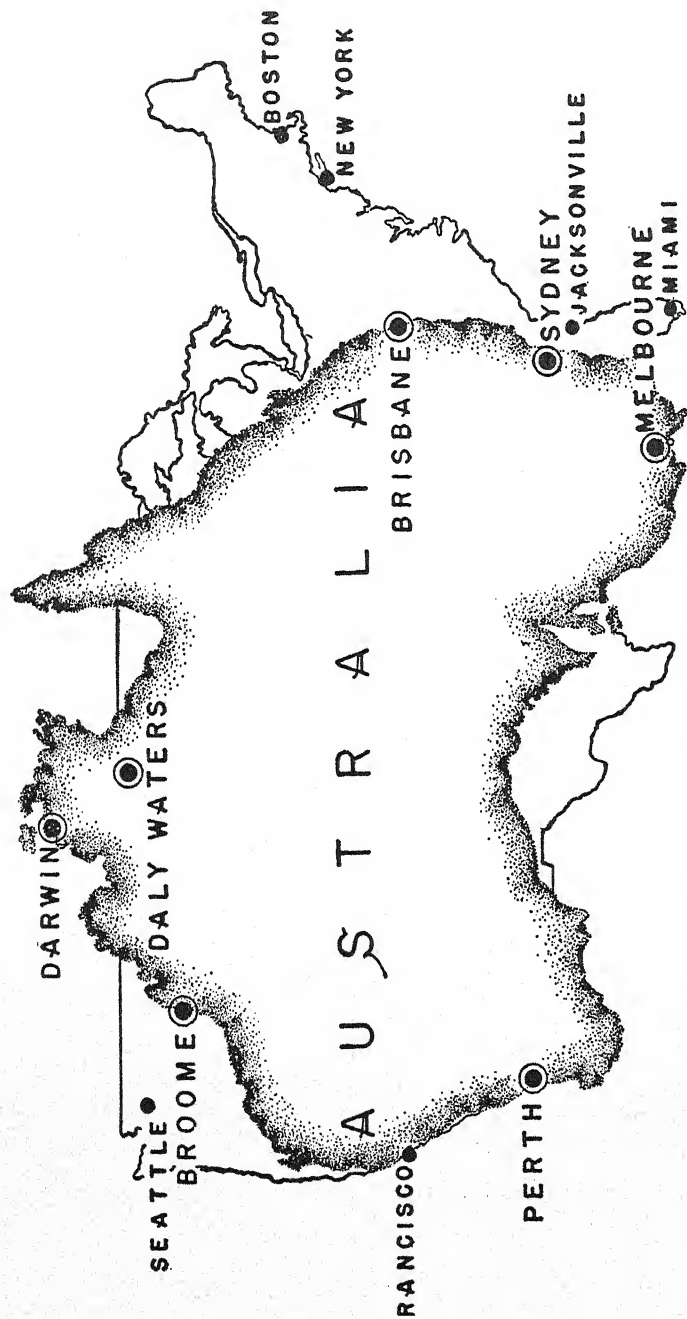
A conquest of New Guinea would have removed the last land barrier guarding the northern approaches to Australia. Though the Japanese plan of war had not included an invasion of Australia,¹² Allied planners now were forced to accept such an eventuality as not only possible but even perhaps probable. Early in March, the Australian chiefs of staff concluded that an attempt on Port Moresby might be expected before the end of the month and an effort to occupy Darwin early in April.¹³ In Washington one, though not all, of the advisory committees of the Combined Chiefs of Staff felt that the enemy might attempt at least the occupation of such points on the mainland as Darwin, Wyndham, and perhaps Townsville.¹⁴ And so once again, as so frequently during that winter and spring, the question of a reallocation of forces had come under consideration. As stated by the joint planners, there were three choices: (1) to send strong reinforcements to the Pacific at the cost of sacrificing the hope



CAMOUFLAGED P-39 BELONGING TO 41ST FIGHTER SQUADRON, 1942

THE SAME PLANE WITH CAMOUFLAGE PARTLY REMOVED





● AUSTRALIA AND THE UNITED STATES ●

Shows Comparative Size With Relative Distance Between Cities

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1947



of an early and vigorous offensive against Germany; (2) to concentrate forces against Germany with acceptance of the possibility of losing all the Southwest Pacific; (3) to reinforce the Southwest Pacific and related areas to a point sufficient to maintain a defensive position while building up in the United Kingdom the forces required for assumption of the offensive at the earliest possible date.¹⁵

It was a difficult decision. The Joint Chiefs of Staff had been prompt to recognize Germany as the most potent of our enemies and to shape their strategy accordingly. At the same time, the key importance of Australia to plans for containing the Japanese had been recognized, and its loss, or even the loss of any considerable part of it, obviously might call into question the whole of the defensive strategy agreed upon for the Pacific. Australia herself was unequal to the task of providing her own defense. The best equipped and trained of her troops had not yet returned from the battlefields of the Middle East, and her air force in Australia on the outbreak of hostilities in the Pacific possessed hardly more strength than did the Dutch in the Netherlands East Indies. In the air especially, the burden of defending Australia would have to fall upon the Americans. At Darwin the RAAF could muster two understrength squadrons of Hudsons, one squadron of Wirraways, and two squadrons equipped with American A-24's. Even less well defended was Port Moresby with two reduced squadrons of Catalinas, one reduced squadron of Hudsons, and one squadron of Wirraways.¹⁶ Small in population and lacking adequate industrial facilities, Australia would be dependent largely on British and American production for the immediate equipment of her units with modern planes. Upon the Americans, too, would fall the main responsibility for defense of the island chain running back from Australia to provide and shield a line of communication with the United States. The Japanese at Rabaul were in position to move down the Solomons toward the New Hebrides and the Fijis with as much ease as now they advanced down the coast of New Guinea toward Port Moresby, and it was evident that air reinforcements would be required in addition to those already taking position along the South Pacific route.* Once again the decision favored maintenance of a defensive position in the Pacific in the hope that an early offensive might be mounted against Germany.

Of assistance in reaching this decision, no doubt, was the belief

* For discussion of the problem, see Chap. 12.

THE DEFENSE OF AUSTRALIA

that to maintain a defensive position in Australia called not so much for a new allocation of air strength as rather for the building up and preparation of air forces already allocated to the area. Earlier plans for the reinforcement of the Philippines and the desperate hope of halting the Japanese advance through the Netherlands East Indies had given Australia, as the base in support of both operations, a high priority in the allocation of available men and planes. The South Pacific route would have to be strengthened, but no addition was made to an earlier commitment to the Southwest Pacific of one light, two medium, and two heavy bombardment groups and of four pursuit groups. Indeed, the forces assigned to Australia would receive additional responsibilities for the security of the South Pacific route; and in March, General Brett received word that instead of four pursuit groups he might expect a total of only three.¹⁷ In command once more of United States Army Forces in Australia, General Brett had stated his needs at no less than six pursuit groups and three light, three medium, and three heavy bombardment groups, to which he added three transport groups.¹⁸ But like other field commanders at this time, he would have to do with less than he felt the situation required.

At the time MacArthur arrived from the Philippines, General Brett, with a staff headed by General Barnes as deputy commander, was engaged in an effort to prepare and deploy his forces for defense of Australia. It was Brett's feeling that air units must be stationed in each of seven widely separated areas having their centers at Darwin, Townsville, Brisbane, Melbourne, Adelaide, Perth, and Sydney.¹⁹ The position of chief of the air staff was held by Brig. Gen. Ralph Royce, who had reached Java during the closing phase of operations there.²⁰ American strength in the air was composed chiefly of pursuit planes. Although organized units considered ready for combat were as yet few, there had arrived in Australia between 23 December 1941 and 18 March 1942 a total of 337 P-40's, more than 100 P-400's,* and 90 P-39's. Of these planes, approximately 125 had been lost to enemy action during the Java campaign, others had been lost by accident, 75 had been turned over to the RAAF, 74 were under repair or awaiting repair, and approximately 100 awaited complete assembly. On 18 March there were 33 P-39's, 92 P-40's, and 52 P-400's in commission.²¹ The last of the three pursuit groups assigned to Australia,

* An early export model of the P-39 with inferior characteristics, including a 20-mm. gun in the nose instead of the 37-mm.

which was the 8th, had disembarked at Brisbane on 10 March, but only the 49th Group, which had come in early in February, was considered ready for combat. The explanation for this and similar delays in preparing other units is readily revealed by a glance at the level of experience of the 49th's 102 pilots at the time of their arrival in the theater. Lt. Col. Paul B. Wurtsmith, its commanding officer, and his executive, Maj. Donald R. Hutchinson, were veteran pilots with 4,800 and 2,600 hours of pursuit time, respectively. Five other pilots had more than 600 hours, and nine were credited with about 15 hours, but the remaining eighty-nine pilots had no pursuit time at all.²² As for the 35th, its more experienced pilots had been drafted for service with the provisional squadrons hurriedly organized for operation in the Netherlands East Indies, and such of them as had survived had been assigned to rest and recuperation in the hope that their battle experience might soon be put to use in the training of other pilots.

Once again men struggled against the disadvantages that had beset their efforts in the Philippines and then in the Netherlands East Indies. They worked against time, enjoyed few of the benefits of previous preparation, and improvised as they went, in an attempt to meet the changing requirements of a highly fluid tactical situation. An organization geared to the requirements of service and supply for operations in Java had to be readjusted to the tactical demands of a defense of Australia. Once more it was necessary to integrate activities with those of an ally; the Americans were dependent upon the Australians for communications and were forced to rely heavily upon them in all matters of administration; and once more good will on both sides was in itself insufficient to overcome all of the difficulties. The penalties of haste proved to be none the less because the haste was unavoidable. Although General Brett early in January had urged upon the authorities in Washington a policy of shipping the unit and its essential equipment together, some organizations continued to arrive without their equipment, with the result that days, and on occasion even weeks, might pass before it could be located.²³ Yet, within two weeks of the final collapse of Allied resistance on Java, American pursuit units were making their presence felt in the defense of Australia's outposts.

Especially depressing was the bomber situation. With twenty-six B-17's, forty-three A-24's, and one or two each of the A-20's and B-25's on hand, only twelve heavy and twenty-seven dive bombers were in commission on 18 March.²⁴ Neither the 7th nor the 19th

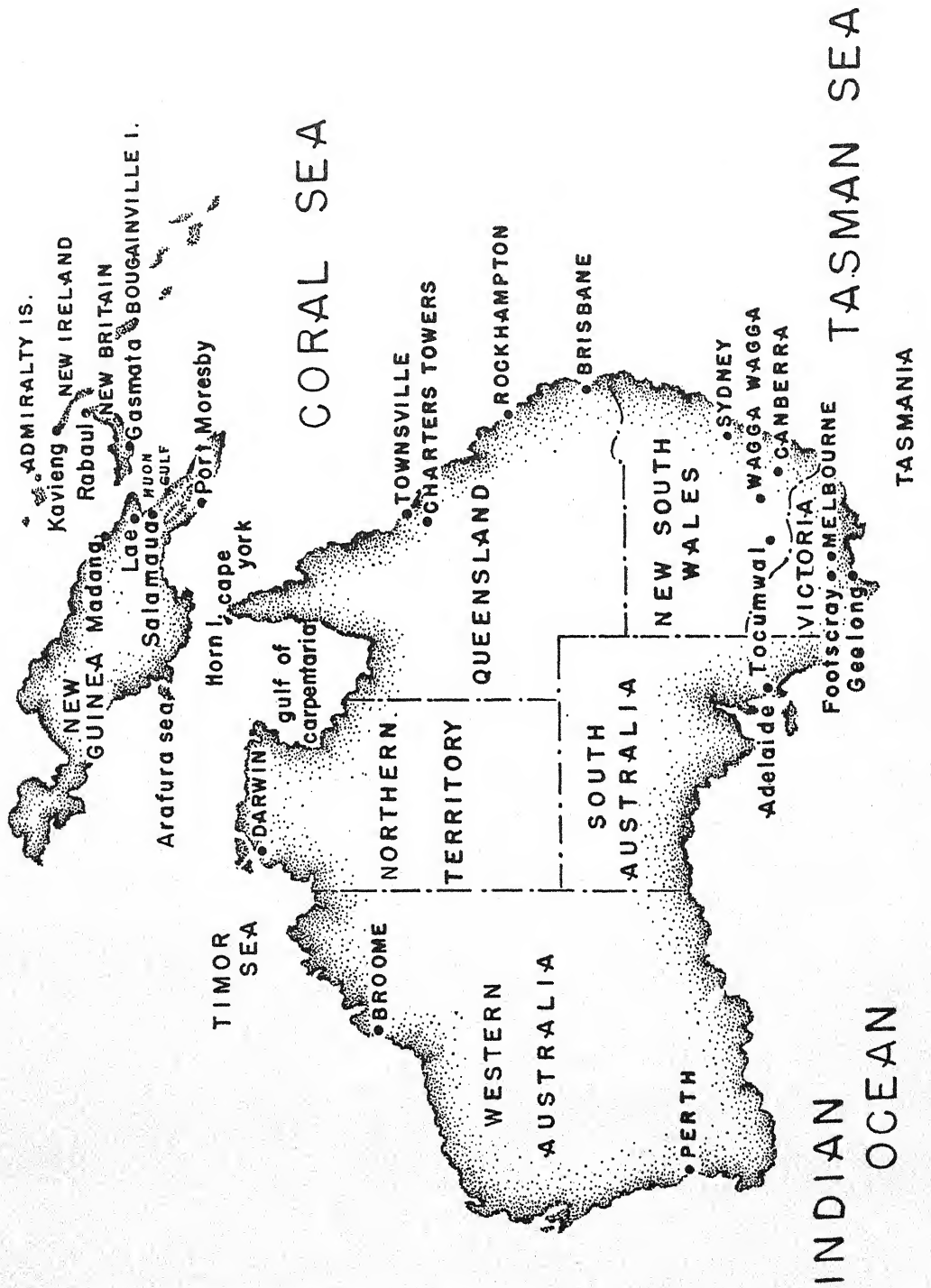
Group was in any condition for immediate employment. The experience in Java had shattered the morale of their battle-wearied crews, and the fourteen B-17's rescued from the disaster there were all in depot for repair. Indeed, the twelve B-17's available for operations were for the moment in the anomalous position of not being even under American command. Both the planes and the crews, some of which had flown into Oahu during the Japanese attack on 7 December, belonged to the 22d Bombardment Squadron and the 88th Reconnaissance Squadron of the 7th Group, but after flying search missions out of Hawaii for two months, they had been attached to Naval Task Force ANZAC early in February for assistance in protection of the South Pacific line of supply. Under the command of Maj. Richard H. Carmichael, the flight had flown twelve missions from the Fiji Islands prior to its arrival at Townsville in Australia on 18 and 19 February. In the absence of official notification of their coming, USAFIA had made no arrangements for maintenance, supply, or administration. For a few days they had remained under naval control, during which time six of the planes flew the first American bomber mission against Rabaul on 23 February, and then they were transferred to control of the RAAF.²⁵

By the end of March the heavy bomber situation had been somewhat clarified. Planes and crews of the 7th Group had been assigned to the 19th, which, near Townsville, was in process of reorganization and preparation for combat under the command of Lt. Col. Kenneth B. Hobson. For the second heavy bombardment group committed to Australia the choice had fallen on the 43d Group, and its ground echelon had now arrived. But it would be months before the 43d entered operations. AAF plans had called for dispatch of two B-17's a day to Australia after 20 March, with the purpose of building up and maintaining a minimum of forty heavy bombers for each of the two groups. The War Department subsequently decided, however, to reconsider allocations to all theaters, and by the end of March only nine of the bombers had reached Australia. A new decision on the combined staff level did not appreciably alter the earlier commitment to the Southwest Pacific. There would be eighty operational aircraft with the addition of forty in reserve, but plans for their movement to the theater called for the dispatch of only thirty in April and the remainder as soon thereafter as was possible.²⁶

Light bombardment units were also undergoing regrouping and

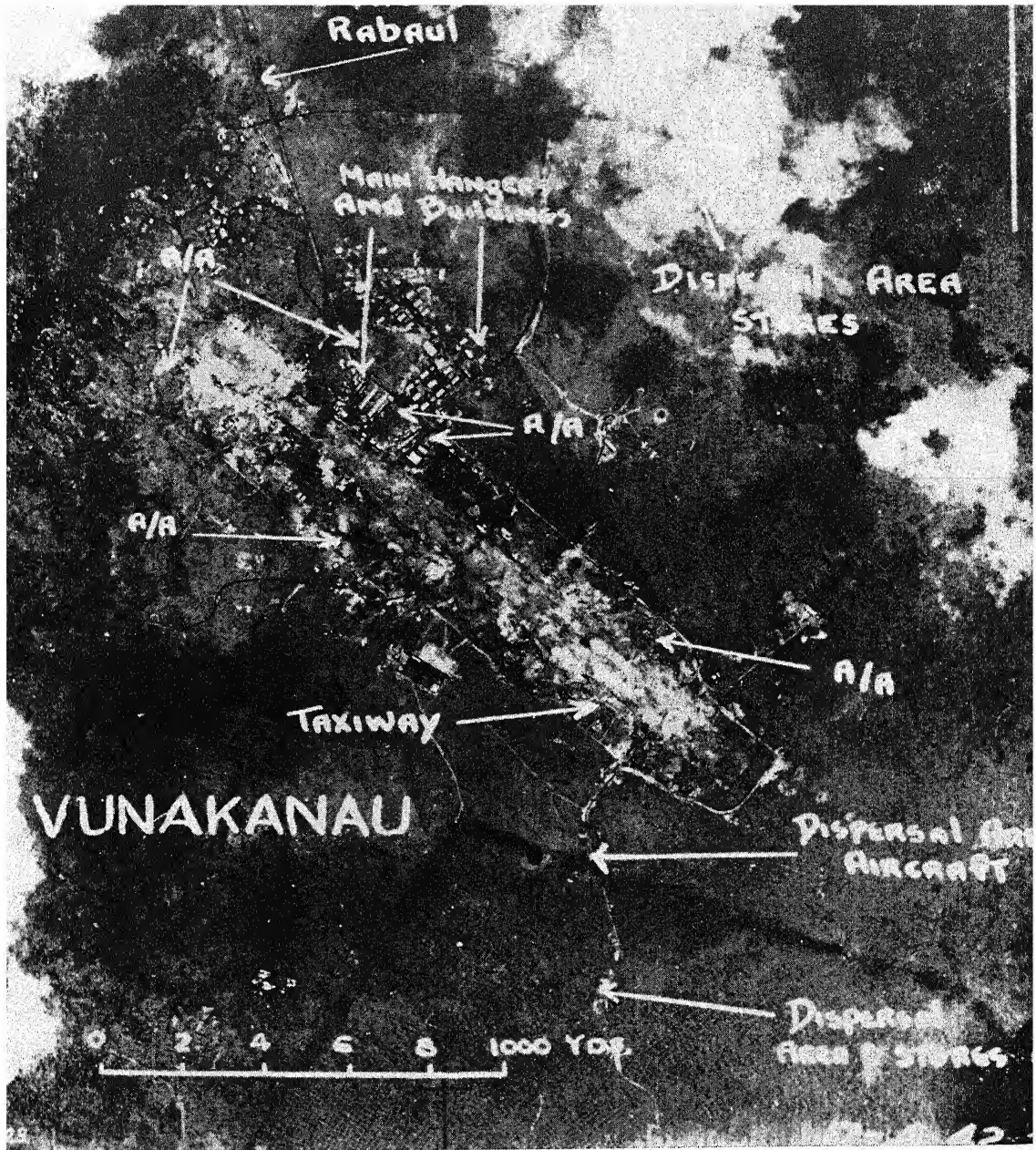
reorganization. Col. John Davies and the few members of the 27th Group who had escaped from the Philippines were flying some twenty-nine A-24's on patrol of the Darwin area. The 3d Bombardment Group (L) having arrived both with crews and ground echelon, it had been decided that this unit would absorb the personnel of the 27th Group. The experienced flyers of the latter organization, accordingly, were assigned to key positions in the other unit, and all available A-24's were used to equip its 8th Squadron. The 13th and 90th squadrons of the 3d Group began to receive at about the same time B-25's, medium bombers originally intended for use by the Dutch. The 89th Squadron, whose personnel was engaged in the performance of service and maintenance for the 19th Group at Charters Towers, still awaited its allotted A-20's.²⁷ Thus, the 3d Group had one light bombardment squadron, two squadrons partially equipped with medium bombers, and a fourth squadron whose knowledge of the structure of a heavy bomber probably exceeded that of any other light bombardment unit in the Army. The two medium bombardment groups assigned were the 38th and the 22d. The ground echelon of the former having arrived on 25 February, it had since then been engaged in a study of infantry tactics and in the erecting of planes for other organizations. It would be many months before its own planes were received. On the other hand, several B-26's belonging to the 22d Group flew the Pacific to land at Archerfield on 25 March, and within a month a total of forty-eight of the Marauders had come in from the United States.²⁸

While the American flyers were being regrouped and prepared, the RAAF continued its efforts to gain intelligence of the enemy's movements and wherever possible to harass him. During March, for example, Darwin-based Hudsons, in addition to maintaining a regular patrol of the Arafura Sea, flew more than twenty sorties against Dili and Koepang in Timor. Other Hudsons and similarly slow and inadequately armed Catalinas wore themselves out on reconnaissance flights and approximately thirty combat sorties against Rabaul, Gasmata, and Salamaua. Total RAAF losses from combat during March were only three Hudsons; more serious was the steady wear and tear on men and machines.²⁹ Though the first Japanese attack of 19 February on Darwin had been its most destructive, the port since then had been under repeated attack, as also had been Port Moresby after its first air raid on the night of 2/3 February.³⁰

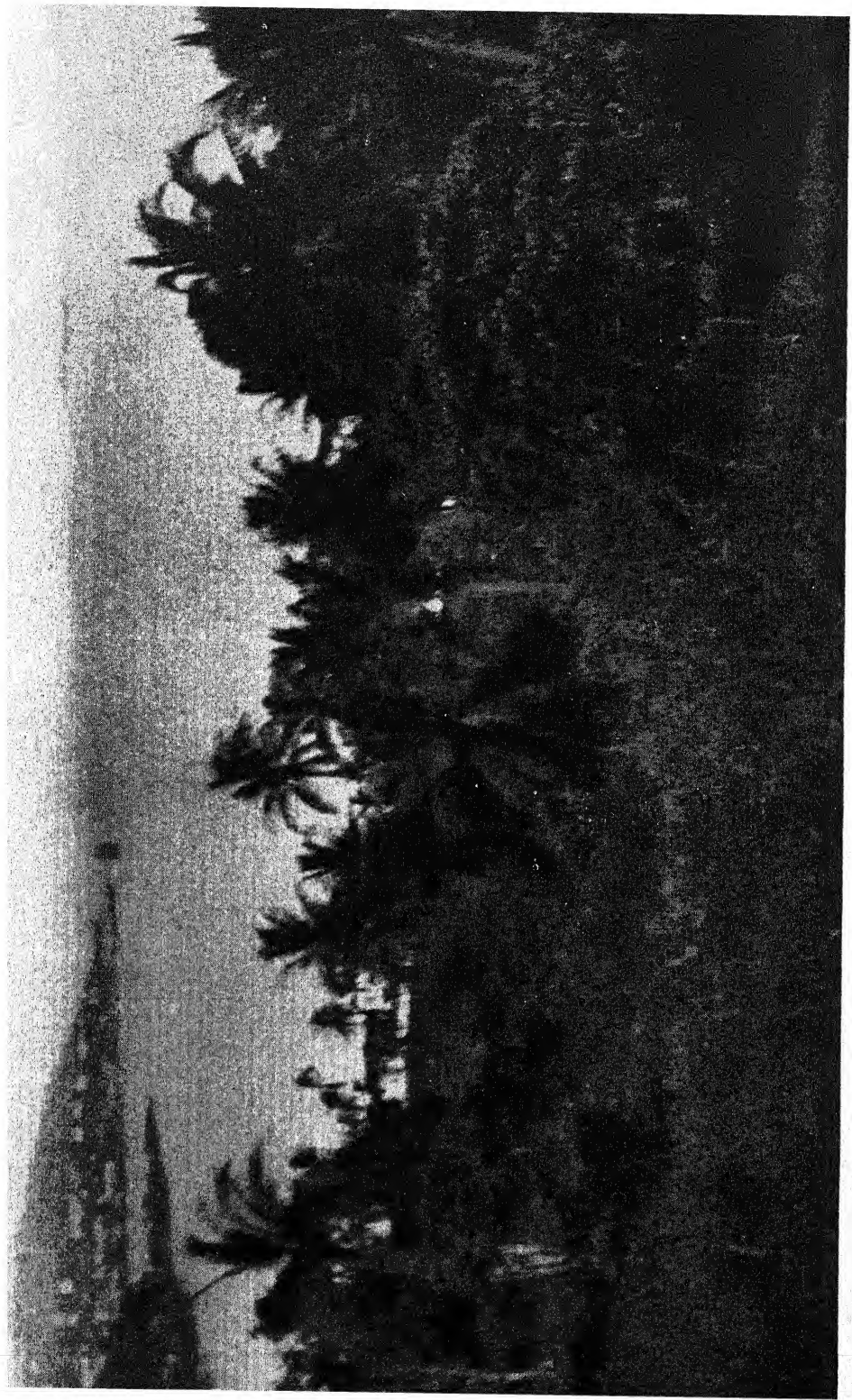


It was the latter part of March before these raids could be seriously opposed. But on 14 March a flight of the 49th Pursuit Group recently stationed on Horn Island off the northern tip of Cape York, under command of Capt. Robert L. Morrisey, surprised and shot down five enemy planes. Two days later an advance echelon of the 49th moved with its P-40's to Darwin, and this was followed on 19 March by the 9th Squadron, which recorded its first four kills before the month was out. By this time, too, P-40's were rising to the defense of Port Moresby. Flown by the RAAF's 75 Squadron, their presence proved a tonic to the Australian garrison which already had dubbed the American pursuit planes "Tomorrowhawks" in token of their long anticipated arrival.³¹

Though limited in number and forced to operate under other serious difficulties, the heavy bombers also made their contribution to a growing defensive effort. The logical target for the B-17 was Rabaul. Possessed of well-nigh unlimited possibilities for expansion as an air base and of a harbor capable of sheltering the largest warships, it stood as a major threat to the Allied position both in Australia and along the South Pacific route. Missions against this target, therefore, were flown in fulfillment of a double responsibility imposed upon our air forces in Australia—to assist in the immediate protection of that continent and of the life line which joined it to Hawaii and the United States. Such missions, however, could be flown only with the greatest expenditure of time and effort. Until sufficient Allied air power could be moved forward to assert control of the air over lower New Guinea, it was necessary to base the big bombers back at Townsville. To strike at Rabaul, they were forced to fly the 600 miles to Port Moresby late in the afternoon preceding the mission; during the night there they would be bombed up and refueled for an early morning take-off. Neither the Townsville nor the Port Moresby areas possessed maintenance equipment and service personnel adequate to keep modern aircraft in fighting trim. At Port Moresby, where there was only one field adequate for bombardment operations, base facilities were particularly primitive. But the hazards of operating off such landing fields were slight in comparison with those of flying across the Owen Stanley range, whose peaks rose up to 13,000 feet and whose passes were rarely below 7,000. Over these mountains weather played hob with bombardment schedules. Frequent storms, down drafts, and almost impenetrable mists which rose daily from the jungle terrain



RECONNAISSANCE PHOTO OF VUNAKANA AIRFIELD (RABAUL), APRIL 1942



PORT MORESBY, 1 JUNE 1942

below in fact prohibited flights except at certain hours of the day.³²

It is not surprising, then, that with no more than a dozen B-17's in commission, the effort that could be made served principally to provide reconnaissance for the Allies and an occasional harassment of the enemy. Between 23 February and 1 April, the B-17's flew approximately twelve missions, of which number six were directed against Rabaul, one against Koepang in Timor, and four against targets in the Lae-Salamaua area. The small scale of the effort receives additional emphasis from the fact that the six Rabaul missions actually put a total of only fifteen B-17's over the target, or an average of less than three planes per mission. The weather was frequently unfavorable, mechanical difficulties at times interfered, and enemy reaction was likely to be vigorous. Claims of two hits on heavy cruisers were unsubstantiated. In short, the value of these missions lay chiefly in the intelligence acquired.³³

Attacks directed against Lae and Salamaua sought to neutralize these points as staging bases for air raids on Port Moresby. Air units in Australia were as yet in no condition to undertake more than a few sorties, but the Navy had two carriers within reach and on 10 March, just two days after the enemy's landings in the Huon Gulf, 104 planes took off from the *Lexington* and *Yorktown* in the Gulf of Papua. Flying through a pass in the Owen Stanley range, they swarmed over the Japanese landing craft at Lae and Salamaua. With the loss of only one plane, they returned to enter claims for the sinking of five transports and a number of war vessels, though later reports indicate that a cruiser and three destroyers had been damaged rather than sunk. Eight B-17's, following hard upon the Navy planes, damaged one transport and reported that at the conclusion of this joint undertaking four ships were left burning, two sinking, and another beached.³⁴ All told, it was a successful effort, but it did not dislodge the enemy and thereafter Lae and Salamaua became principal objectives of land-based air attack.

The most ambitious single effort of these early days in Australia was directed once more against the Philippines rather than New Guinea or the Bismarcks. Late in March, General Wainwright had requested that a squadron of bombers be sent, in the hope that they might break the Japanese blockade long enough to permit the movement of supplies from Cebu to Corregidor.³⁵ General MacArthur himself was reluctant to abandon all hope of assistance to the be-

leaguered garrisons,³⁶ and plans for a special mission were completed at a conference attended by General George, Col. John H. Davies, and others in Melbourne on 7 April. Accordingly, in the early morning of 11 April, ten B-25's equipped with auxiliary fuel tanks and three B-17's took off from Darwin for the 1,500-mile flight to Mindanao. General Royce was in command; Colonel Davies led the B-25's and Capt. Frank Bostrom the B-17's. All planes having arrived safely at Del Monte, the B-25's were then dispersed to neighboring auxiliary fields. During the next two days attacks were made against shipping and docks at Cebu, air and harbor facilities at Davao, and Nichols Field on Luzon. The six badly worn and battered pursuit planes available on Mindanao were used in attempts to pin down enemy fighters at near-by Davao airfield, and for protection of the bombers in landing and taking off. They were unequal to the task, although during the period they flew more sorties than the bombers. Enemy bombings of Del Monte destroyed one of the B-17's and seriously damaged the other two. Indeed, only two heavy bomber sorties were completed, one against Nichols Field and the other against shipping targets in Cebu harbor. The B-25's operated from better-concealed strips, and in over twenty sorties sank one and possibly two other transports and shot down three enemy aircraft.³⁷

The American flyers returned to Australia with the loss of only one B-17 and no casualties. The scope of the mission had been indeed record-breaking; Captain Bostrom, for example, recorded thirty-eight hours in the air and in all had flown approximately 6,000 nautical miles to drop a load of bombs on Nichols Field. But one load of bombs could count for little in the final checkup, and some of the participants questioned whether the results justified the extraordinary effort required. Others returned with a memory chiefly of gallant men who had serviced their planes on Mindanao—men who already knew their doom. For this was the last major attempt to fly across the far-flung battle lines to their aid.³⁸

The Allied Air Forces

Meanwhile, in Australia and in Washington consultations proceeded on urgent questions of command and organization. The dissolution of the ABDA Command had left no provision for an over-all command of Allied resistance to the southward thrust of the Japanese. Their conquest of the Netherlands East Indies had created distinctly sep-

arate problems of defense at either extremity of the so-called Malay barrier. Moreover, in the organization of defensive efforts in the Pacific, as with those to be mounted in the China-Burma-India area, the double threat of a Japanese advance from Rabaul by way of New Guinea to Australia and from the same point by way of the Solomons against the South Pacific line of communications presented its own peculiar problems of organization and co-ordination. The Combined Chiefs of Staff were in agreement that the Pacific should be primarily an area of American responsibility, but among the Joint Chiefs the question of Army and Navy responsibilities within this theater occasioned some debate. A workable agreement was soon reached, however, on the basis of a proposal by President Roosevelt: there would be a separate Southwest Pacific Area under the command of General MacArthur; the remainder of the Pacific would be divided into the Southeast Pacific and the Pacific Ocean areas, the latter to be subdivided under naval command into the North, Central, and South Pacific. Forces in the adjoining South Pacific Area, which included New Zealand and New Caledonia, thus would operate under the command of Adm. Chester W. Nimitz as commander in chief of the Pacific Ocean Area, whose responsibilities included the maintenance of a line of communications between the United States and the Southwest Pacific, the support of operations in that area, and preparation for offensive action that might be separately or jointly undertaken.³⁹

By the end of March, a directive for General MacArthur had been drafted and submitted to the Allied governments concerned. Under its provisions, the responsibilities of the new command were to check the enemy's advance toward Australia; to exert all possible pressure on the enemy; to protect land, sea, and air communications within the theater; to support friendly forces of the Pacific Ocean Area; and to make suitable preparations for a later assumption of the offensive.⁴⁰ In accordance with this directive, which meantime had undergone only slight modification, General MacArthur assumed command of the Southwest Pacific Area on 18 April 1942. The immediate problem in the direction of operations was to provide for a co-ordination of effort between Australian and American forces and the few Dutch units which had escaped from the Netherlands East Indies. Accordingly, the staff of the new command was announced as follows: Gen. Sir Thomas Blamey, Commander of Allied Land Forces; Lt. Gen. George H. Brett, Commander of Allied Air Forces; Vice Adm.

Herbert F. Leary, Commander of Allied Naval Forces; Lt. Gen. Jonathan M. Wainwright, Commander of Forces in the Philippines; and Maj. Gen. Julian F. Barnes, Commander of U.S. Army Forces in Australia.⁴¹

General Brett assumed command of the Allied Air Forces on 20 April, with assignment to his command of the control of all AAF tactical units and associated service elements of the U.S. Army then in Australia, and operational control, except for training, of the RAAF and the Royal Netherlands East Indies Army Air Force.⁴² The necessity of adapting his plans to the existing defensive organization of Australia, a shortage of American staff personnel, an unavoidable dependence upon the RAAF for communications and administrative facilities, and a purpose to merge the several components into a truly unified force were reflected in a balance between Australian and American officers in the air staff announced on 2 May as follows: Air Vice Marshal William D. Bostock, RAAF, chief of staff; Col. Edwin S. Perrin, deputy chief of staff; Brig. Gen. Ralph Royce, senior air staff officer; Col. Eugene L. Eubank, director of plans; Col. Ross G. Hoyt, director of operations; Air Commodore Joseph C. Hewitt, RAAF, director of intelligence; Group Capt. F.R.W. Scherger, RAAF, director of defense; and Group Capt. Carn S. Wiggins, RAAF, director of communications.⁴³

Actually, the extent of Australian influence was considerably greater than at first glance would appear. General Brett at no time held administrative control of RAAF units, and AAF dependence on the Australians gave to them a substantial degree of administrative and even operational control of the American units. Australian administrative forms, unfamiliar and frequently confusing to the Americans, were used; Australian officers by virtue of rank filled a majority of the key command positions at the bases from which the Americans operated; operational control, moreover, would be implemented through the five military areas into which Australia was divided, each of which was commanded by an Australian officer.⁴⁴ Indeed, one official report went so far as to describe Australian control as extending to "every echelon of American Air Forces and every airfield at which they are stationed."⁴⁵ Personal and official relations remained good, but it was natural that General Brett should seek the assignment to his command of American staff officers of sufficient experience and rank to provide a better balance.

He showed greater concern, however, for modification of certain features in both American and Australian organization that would provide a higher degree of flexibility in the employment of air units. Though for a time an attempt was made to hold the American groups intact, they were soon divided to provide individual squadrons for defense of the more exposed areas, and General Brett came to feel that the squadron rather than the group would prove the basic tactical unit in later offensive operations. He proposed the establishment of air headquarters in each defensive area, prepared to accept and operate any number of squadrons assigned under a general plan to concentrate tactical units in accordance with a changing tactical situation, and with a view to providing a command structure that in itself would be flexible enough to move forward in offensive operations as the occasion required. Such a headquarters would remain in the original area only for so long as it was necessary and then, in General Brett's words, "would leap-frog to take up a command at some newly acquired point."⁴⁶ Inadequate personnel and other considerations made it impossible to follow this proposal, but General Brett sought greater flexibility of control by the establishment on 4 May 1942 of U.S. Air Commands No. 1 and No. 2, located respectively in the northwest and northeast defensive areas. Commanded by Col. Albert L. Sneed at Darwin and Brig. Gen. Martin F. Scanlon at Townsville, the two headquarters were supposed to be prepared for direction of all types of air operations. Actually, the American planes remained subject to the control of the area commanders, and before the month was out the two commands had been dissolved and their planes had been assigned for operations, in the one instance, to the commanding general of the land forces of the Northern Territory and, in the other, to the commander of the New Guinea Force. Though it was understood that these officers, who were themselves directly responsible to the commander of the Allied Land Forces, would not interfere with a control of air operations by air officers except in the event of an imminent attack, there was a feeling among AAF personnel that an effective organization remained yet to be attained.⁴⁷

On the other hand, there was cause for satisfaction with decisions reached regarding the organization of air service. On 27 April a new command, the United States Army Air Services under Maj. Gen. Rush B. Lincoln, took over the responsibility for air service from USAFIA. At first there was some confusion as to the extent and exact

nature of General Lincoln's responsibility, but by the end of May clarification had been provided by official definition of the Air Services as an administrative, supply, maintenance, and engineering command operating under the commander of the Allied Air Forces.⁴⁸ Its internal organization reflected the current effort to achieve a requisite mobility within the Allied Air Forces. Instead of attaching service elements to tactical units, the plan was to make each air base group responsible for all air service within a specified area. Thus the 35th Air Base Group, stationed in the Townsville area, was forced with the passage of time to acquire the versatility necessary to service and maintain A-20's, A-24's, B-17's, B-25's, B-26's, P-39's, P-400's, and an assortment of transport planes. Four other groups, stationed at Archerfield near Brisbane, Ballarat near Melbourne, Mascot in the Sydney area, and Daly Waters below Darwin, developed a similar versatility, while a sixth air base group located at Charters Towers sharpened its mechanical and related skills by servicing all planes ferried in from the United States.⁴⁹

In addition, the air base groups were forced to provide the services of supply depots, for the Army Air Services had only one air depot group at its disposal. This, the 4th Air Depot Group, by dividing its units among three widely separated points, was attempting in April to perform functions which normally would require three such groups. At Footscray in Victoria it operated a central supply depot, at Brisbane a branch supply depot, and at Wagga Wagga in New South Wales a major repair depot, not to mention the supervision it provided over aircraft erection facilities at Amberley and Geelong.⁵⁰ Obviously, there was need for additional air depot groups, and on 1 May Brett received authorization for activation of another group, the 81st; but personnel and equipment were to be taken from that already available in Australia. Activated on 11 May under command of Col. R.L. Fry, the new unit received responsibility for the assembly and maintenance of aircraft and the supply of air units in the Brisbane area. The shortage of trained and experienced personnel proved a serious handicap; but as in other service units, improvisation and hard work made up for some of the inadequacies. Help came, too, from civilian sources. With the co-operation of the Australian Department of Aircraft Production, Australians were employed for maintenance work; such local concerns as the Ford Motor Company and the National Airways also assisted in the provision of facilities and experienced personnel. At the

same time, civilian factory representatives of the several American aircraft producers became well-nigh indispensable in the training of service personnel, particularly by guiding them to an understanding of the peculiar features of the several types of aircraft.⁵¹

Work on a permanent supply and maintenance depot at Tocumwal in New South Wales, between Melbourne and Canberra, was in progress by May. In selection of the site, the authorities had been influenced by previous RAAF plans for a similar use of the place, by its convenient situation with reference to Melbourne and Sydney, and by the fact that it lay at a terminal point for different-gauge rail lines; but the decision also reflected the great current concern for security from enemy attacks on Australia. With plans for four all-weather runways, for satellite fields, for the garrisoning there of 4,600 military personnel, and for depot facilities requiring a staff of 2,000 workers, the project was indeed an ambitious undertaking.⁵² Yet, with an early improvement in the tactical situation, it became necessary before the Tocumwal depot had even reached its operational capacity to transfer the main center of such activity northward to Townsville, which was considerably nearer the area of combat in New Guinea.⁵³

On the eve of the Battle of the Coral Sea, which would determine the immediate fate of Australia, many problems remained unsolved. Of these, logistical problems were among the most difficult. Distances in Australia were comparable to those of the United States, but transportation and communication facilities were much less adequate. Railway lines, like the population, were centered in the southeastern part of the country, and there was no railroad connection with such northern outposts as Darwin. Moreover, where connections existed for any great distance there were special difficulties arising from the fact that the Australian railways were not of uniform gauge. Particularly serious was the problem of storing and transporting high-octane gasoline. Stocks at the outset were relatively small and were not strategically located. Most of the storage capacity being in the southern part of the continent, it was necessary to unload there bulk shipments from the United States. Rail shipment thence to operating units in the north was almost out of question, for every change in railroad gauge required the pumping of fuel from one tank car to another. Transshipment, therefore, had to be made largely by water routes exposed to enemy attack, and this arrangement called for a large supply of fuel drums to be sent from the United States. The relatively

small population and industrial capacity of Australia forced the Allies into a heavy dependence upon seaborne supplies at the very time when a shortage of shipping stood among the most acute problems confronting the associated powers.

Air transport was as yet insufficiently developed to provide substantial relief. The Air Corps Ferrying Command assigned two LB-30's to a South Pacific run in April, but the principal purpose was the return of bomber ferry crews to the United States.⁵⁴ Under Harold Gatty, as director of Air Transport in Australia, progress was being made in the organization of intra-theater transport services, but as yet he lacked the planes, equipment, and trained personnel required. In the development of inter-theater air transport, moreover, there were administrative and jurisdictional problems yet to be solved. The ferrying service across the Pacific, which increasingly came to be joined with an air transport service, depended upon facilities at Williamstown and Amberley which came under the control of the Directorate of Air Transport; and not until September would anything like a satisfactory understanding be reached regarding the prerogatives of a field command as against the autonomy considered essential to the efficient operation of world-wide transport and ferry services.⁵⁵ New forms of logistical support no less than new weapons of warfare present their peculiar problems of command, and time is usually required to resolve them.

Considering the brief interval that had elapsed since the debacle in the Netherlands East Indies, however, the emphasis must be placed upon the progress made. During April and May, significant steps were taken by the Australian government to adjust the economic capacities of the country to the needs of the Allied military forces. In close coordination with General MacArthur's staff, the administrative machinery was provided to relieve congestion in the harbors, for a more efficient direction of the production and distribution of food, and for the supply of labor and equipment required in the construction of military installations. Through these and other actions, Australia's productive capacity would substantially reduce the burden imposed on Allied shipping.⁵⁶

At the same time, AAF units, as yet the only American forces available for combat duty, were moving forward to assist the Australians in the defense of their continent. P-40's of the 49th Group having already taken position in defense of Darwin, the P-39's of the 8th

Group had moved into Port Moresby by 30 April and that afternoon thirteen of the twenty-six Cobras which had come in carried out their first mission. Under the leadership of Lt. Col. Boyd D. Wagner, they accomplished a thorough strafing of grounded planes and fuel dumps at Lae and Salamaua, an action which was followed by a brisk engagement with enemy fighters.⁵⁷ Six A-24's of the 8th Bombardment Squadron had led a movement of AAF dive bombers into Port Moresby a month earlier on 31 March. The B-25's of the 3d Group had begun operations against New Guinea targets early in April, as also had the B-26's of the 22d Group.⁵⁸

Important patrol and reconnaissance duties assumed both by mediums and heavies cut down substantially the scale of bombing operations, for the AAF planes had become a principal reliance for intelligence of the enemy's movements and intentions. All bomber units equipped with planes shared in the effort, but special notice is due the 8th Photographic Squadron and the 435th Bombardment Squadron. AAF Headquarters had been prompt to recognize the need for properly equipped photographic squadrons, and shortly after the outbreak of war 100 P-38's had been set aside for necessary modification. A training program had been inaugurated at Colorado Springs, and the first unit ready for operation was assigned to Australia. Flight "A" of the 8th Photographic Squadron arrived there on 7 April, and nine days later had gone into operation with its four F-4's (P-38E's modified by the installation of cameras and two additional 75-gallon tanks) under command of Capt. Karl Polifka.⁵⁹ The most conspicuous services were provided, however, by the 435th, which formerly had been the 40th Reconnaissance Squadron of the 19th Bombardment Group. Anticipating the assignment of photographic groups to all theaters, the AAF on 9 April directed the redesignation of all existing reconnaissance squadrons as bombardment units, and under this provision the 40th became the 435th Bombardment Squadron.⁶⁰ But it continued to serve, with assistance from other units, for reconnaissance of the New Guinea, New Britain, and Solomons areas. And when the Japanese moved out in early May for an attack by sea on Port Moresby, AAF units contributed to the frustration of their purpose perhaps chiefly through the reconnaissance they provided.

By that time, the final entry had been made in the long record of AAF flights from Australia to the Philippines. The last successful flight for the evacuation of personnel had been made in a B-24 piloted

by Capt. Alvin J. Mueller on 29 April. Just before midnight, and only three hours after its arrival from Australia, the plane took off from Del Monte to land its passengers at Batchelor Field, south of Darwin, the following day. On 5 May, Captain Mueller returned to Mindanao with a heavy cargo of mail, ammunition, and other supplies, but after circling Del Monte and its satellites for three hours in the darkness without receiving a friendly signal, he turned back. Running out of gas, he was forced down near an island, from which the crew was subsequently rescued by submarine.⁶¹ This last attempt had been made only a day before the surrender of General Wainwright's exhausted forces brought an end to formal resistance in the Philippines. The AAF would return with MacArthur to the Philippines, but the way back would be long and difficult.

CHAPTER 12

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DRAWING THE BATTLE LINE IN THE PACIFIC

THE SIX months which followed the attack upon Pearl Harbor were months in which the opposing lines of battle were drawn across the Pacific, but the drafting of these lines presented to the planners of Allied strategy a series of painful shocks. One after another the great bases and focal points of Allied resistance throughout the Southwest Pacific had been overrun by the full flood of Japanese expansion, as the grand design of the enemy's strategy became increasingly clear. His prize was the fabulously rich Netherlands East Indies; by 10 March he held Java, and there remained only the task of tidying up the loose ends through all the islands and the final reduction of American forces in the Philippines. For the Japanese planners, the problem now became one of organization of the gains. Here, within their grasp, were rich stores of foodstuffs, minerals, and the most vital resource of modern war, oil to fuel the fleet and power the planes.

To shield this vast empire, the Japanese navy felt the need for a series of peripheral redoubts, minor and major bases which would serve as sally ports, listening posts, and as effective deterrents to any attempts on the part of the Allies to crash through into the vital communication lines leading back to the home islands.¹ Some of the islands needed for the purpose already lay in Japanese hands, such as the Marshalls and the Carolines, both of which groups had been obtained so easily during the first World War; other bases, like Singapore, Soerabaja, Amboina, and Rabaul were freshly acquired as the products of the relentless southern sweep of the enemy's air, sea, and land forces. Among the new bases were Guam and Wake, neither of them so richly endowed as the Dutch or British prizes, but the capture of

Wake carried one Japanese outpost to a point less than 1,200 miles from Midway, and both islands lay squarely astride the central Pacific air route to the Far East.

Defense of the South Pacific Route

It has been indicated elsewhere that the fear of just such a loss of the central Pacific bases had driven Air Corps planners to push hard for an alternate line through the islands of the South Pacific. By the spring of 1942, their efforts were approaching completion and the route across the islands was usable; actually, the trail-blazing flight had been made in January. But establishment of the operating facilities alone was not the only claim placed upon the resources of the Allies by the island bases; unless adequate defenses were provided for these Pacific steppingstones, the southern line to Australia might well be cut even as the northern route had been blocked. The attempt to reinforce the Philippines by sending planes eastward across the South Atlantic and Africa, thence on to India and down through the Netherlands East Indies, carried with it a prohibitive attrition rate. Furthermore, the fall of the Indies to the Japanese in February and March had placed the enemy athwart this route and threatened possible air lanes across the Indian Ocean, so that now nothing remained but the new and untried path down through the South Pacific islands.

In their prior planning, Army and Navy commanders had devoted scant attention to the problems of moving land-based aircraft across Pacific atolls and islands, or of defending the bases which made such movement possible. The Army and Navy Joint Board Estimate of September 1941 had ignored the necessity of such defense; the Philippines were in U.S. hands and, accordingly, the board had planned to concentrate land-based aviation in these islands and the Hawaiian group.² Elsewhere in Pacific waters it was assumed that the U.S. Navy would restrain the Japanese, but this theory now was open to revision in view of the fact that the bulk of what then was regarded as the fleet's offensive and defensive power lay fast in the mud at Pearl Harbor. Thus the island bases stood in more urgent need of local defense than was originally appreciated, for there could be no assurance that the enemy would terminate his expansion with the capture of Rabaul or Wake; at this stage of the war it was the Japanese rather than the Allies who determined the limits of enemy aggression.

Even though much of the U.S. striking power had been lost in the

MARIANA ISLANDS
GUAM ISLAND

WAKE ISLAND

HAWAIIAN ISLANDS
HONOLULU

ISLAND CHAIN OF THE SOUTH PACIFIC

PALAU ISLANDS

TRUK ISLANDS

PALMYRA ISLAND

CHRISTMAS ISLAND

GILBERT ISLANDS

PHOENIX ISLANDS
CANTON

SOLOMON ISLANDS

Bismarck Archipelago
NEW GUINEA

CORAL SEA

NEW HEBRIDES
EFATE

FIJI ISLANDS
VITI LEVU
SUVA
VITI ISLAND

NEW CALEDONIA
PLAINES DES GAIACSES
TONTOUTA
NOUMEA

AUSTRALIA

BRISBANE

SAMOA ISLANDS

TONGATABU

SOCIETY ISLANDS
BORABORA



attack of 7 December, thereby weakening the defense of the ferry line, there was some reluctance to send air units into the South Pacific in the days immediately following Pearl Harbor. On 9 December the Air Staff informed the War Department that in view of the present international situation it could not consider favorably the project for basing units at Christmas and Canton islands.³ One month later, opinion had altered. It was currently believed that the Japanese were able to assault New Caledonia or Fiji with at least one infantry division supported by strong naval and air forces.⁴ Recognizing that the defense of all the bases along the route depended ultimately upon their support by naval and air forces, on 12 January the Combined Chiefs of Staff approved a plan to garrison all the islands on the ferry route leading down to Australia.⁵ Initially some difference of opinion persisted as to the extent of AAF ability to commit air units to the islands. But there was agreement that the United States should arrange for the local defense of Palmyra, Christmas, Canton, American Samoa, and Borabora, and that New Zealand, assisted by U.S. forces and materiel, should bear responsibility for local defense of the Fiji Islands.⁶

The defense plan called for the dispatch to New Caledonia of one pursuit squadron of twenty-five aircraft and one medium bombardment squadron of thirteen planes, and although it failed to designate which one of the Allies would provide the garrison, it was generally assumed that the pursuit unit would come from the United States. In fact, A-3 of AAF Headquarters already had prepared a squadron, the 68th, which was ready for embarking. The unit later was replaced by the 67th, which sailed from New York on 23 January.⁷ General Arnold took issue with the plan to place AAF units on New Caledonia. He had no squadrons available except at the expense of forces in the ABDA area, nor did he regard the priority of New Caledonia as outranking that of Fiji or Samoa. He pointed out that his own problem differed drastically from that facing General Marshall: the Army possessed sufficient ground forces to permit simultaneous dispatch to Australia and Northern Ireland and Iceland, but there was inadequate shipping to carry the troops, while the AAF, on the other hand, simply lacked the units.⁸ Believing that the British should provide the necessary aircraft for the New Caledonia air garrison and that Australia should furnish the pilots, he urged that the former be requested to meet this need, whereupon arrangements were made to

move the 68th Pursuit Squadron to Australia,⁹ and on 17 February the 68th sailed from San Francisco.

Again there was a shift in policy. On 28 January the AAF agreed to furnish the pursuit squadron for New Caledonia but clung to the original conviction that the bombardment garrison should be supplied by the British and/or the Australians.¹⁰ A subsequent conference with the Royal Air Force representative on 15 February indicated the improbability of British capacity to stock New Caledonia with aircraft of any kind, and the entire matter was passed on to the Combined Staff Planners for further study on 1 March 1942.¹¹

Defense of New Caledonia alone was not enough to assure the integrity of the South Pacific. Clear across the Pacific extending back to Hawaii were islands whose defense was vital to the ferry route. By 20 January 1942, plans and preparations had advanced to the point where some units already were en route to their island bases while others were under orders awaiting transfer from continental stations. So urgent was the Pacific situation that the task force being prepared for Australia assumed top priority, while that for the Pacific islands (FIVE ISLANDS) ranked second in importance, with the forces being prepared for European theaters following after.¹² Task Force FIVE ISLANDS carried the basic air units for garrisoning the South Pacific islands, and these were as follows: (1) Fiji, to which the 70th Pursuit Squadron was en route; (2) Canton, to which the 68th Pursuit Squadron was assigned, but which it would never reach, going from Australia to Tongatabu; (3) Christmas, assigned the 12th Pursuit Squadron; (4) New Caledonia, whose 67th Pursuit Squadron originally had been directed to Australia; and (5) Palmyra, for which the 69th Pursuit Squadron had been earmarked. Necessary ground services were allotted for each of the units, and in preparing them for shipment, General Arnold directed that they be afforded a high priority, both for personnel and equipment.¹³

By February, sufficient air units had arrived at their stations across the Pacific to offer some opposition to a Japanese attack. None of the bases was in a position to offer stout prolonged resistance, but the ferry route no longer lay defenseless. Fiji, a vital link in the chain, now had one pursuit squadron, the 70th, which had debarked at Suva on 29 January, although the first of its 25 P-39's was not assembled until 9 February. In addition to the P-39's of this squadron, the Royal New Zealand Air Force operated 18 Hudsons at Fiji in a squadron

and a half of general reconnaissance light bombardment aircraft, as well as four Singapore flying boats and six ancient Vincents. The Fijis, moreover, would receive additional air support with the arrival of the USS *Curtiss*, which was currently en route to Suva with six PBY's for temporary operations, although this vessel was not assigned to the area.¹⁴ Down in New Zealand, the Royal New Zealand Air Force maintained a force of Hudsons similar to that in Fiji, and had as projected reinforcements the addition of 34 Hudsons, 14 Ansons, and 18 P-40's. The 67th Pursuit Squadron, equipped with 25 P-400's, early export version of the P-39, was even then at sea on the way to Australia, arriving at Melbourne on 26 February. The 68th reached Archerfield at Brisbane on 8 March. Samoa's defense was in naval hands, and the Navy had committed half a pursuit squadron and half a bombardment squadron to this area, although the date of arrival was not yet known. Christmas Island was strengthened by the presence of the 12th Pursuit Squadron, but orders to move the 69th Pursuit Squadron down to Palmyra had not yet been issued; the air defense of this island rested with the Navy, which maintained two patrol bombers on station.¹⁵

New Caledonia, a French dependency, was a keystone in the island chain. It was the largest of the islands, it could support several airfields, and it lay directly across the Coral Sea from Australia in such a way that it protected the flank of the northeast coast of that continent, now so vital as a vast base for Allied forces. Its nickel and chrome mines were readily accessible to an invader. Admiral King believed that the mines offered a tempting bait to the Japanese who were currently short of these metals and who, in fact, actually had considered New Caledonia as a source of nickel, although shortage of shipping had caused abandonment of the plan. Furthermore, enemy possession of the island would drive all reinforcements to the ABDA area over the long route south of New Zealand.¹⁶ Accordingly, it received a larger share of the Pacific defenses than any of the smaller islands. Australia, owing to the scarcity of troops for home defense in the absence of four divisions overseas, was unable to offer any increment to the single company of troops then in New Caledonia, and the United States-British joint planning committee had recognized this situation, although the defense of the island was an Australian responsibility. Australian naval units were laying mine fields in the approaches to Noumea and Tontouta, but that was the limit of her

contribution to the defense. It was clear that reinforcement would have to come from the United States. Hence, it was agreed that the United States should, as a temporary measure, furnish forces as early as possible to protect this vital island. Furthermore, the committee estimated that a desirable garrison for the French possession should consist of one infantry division reinforced, together with one pursuit squadron, one medium bombardment squadron, and the necessary service units.¹⁷

In recognition of the necessity of forestalling any Japanese designs upon New Caledonia, on 22 January 1942, Brig. Gen. Alexander M. Patch, Jr., was designated commander of the New Caledonia Task Force, whose units later were to gain distinction as the Americal Division which relieved the First Marine Division on Guadalcanal. General Patch's mission was explicit: he was to hold New Caledonia against attack. But he was to stand at the end of a most complicated supply line. His force of 14,789 officers and men, as originally projected, sailed from New York on 23 January and after transshipping at Melbourne, amid a period of some uncertainty as to its precise destination and employment, arrived at Noumea, New Caledonia, on 12 March.¹⁸ General Patch was authorized to call upon General MacArthur for logistic support until such time as direct supply lines could be established with the United States, but he was advised that additional forces could not be made available in the initial plan of defense. However, one squadron of the 38th Bombardment Group (M) then in Australia was designated for transfer to General Patch's command; but the air echelon of the unit was still in training in the United States and was not expected to be sent to the South Pacific until the first of June or until its training was completed and its full equipment was supplied. In the meantime, it would be necessary to limit aerial protection for the forces on New Caledonia to whatever assistance the Allied Air Forces, concentrated on the east coast of Australia, could provide; General MacArthur regarded it as too late and too dangerous to attempt any direct reinforcement from Australia, in view of the enemy concentrations to the north.¹⁹

It was evident that General Patch's task force had arrived in time to avert a diplomatic conflict with the Free French over the provision of defense forces for the air bases on New Caledonia. As the airfield at Plaines des Gaiacs neared completion, the French High Commissioner in Noumea observed its progress and became increasingly con-

cerned over the defense plans, apparently feeling that unless the area received more adequate protective measures, Plaines des Gaiacs would become an invitation to the Japanese rather than a weapon of resistance. He went so far as to inform the liaison officer of the Hawaiian Department that if weapons and troops failed to arrive before Plaines des Gaiacs became operable he would withdraw authority for all further work. The State Department smoothed the way by assuring the Commissioner that assistance would be given, but it did not reveal the strength, nationality, composition, or projected movements of Patch's units, and the question was dropped with the arrival of the ground force on 12 March, followed on the 15th by the 67th Pursuit Squadron.²⁰ In addition to these forces, action was expedited in preparing the ground echelon of the bombardment squadron for transfer to New Caledonia; and on 17 May, approximately 208 men, comprising the 69th Squadron of the 38th Bombardment Group (M), with its attached 4th Platoon of the 445th Ordnance Company (Aviation), sailed from Brisbane, carrying their equipment with them.²¹

Scarcely less vital or vulnerable than New Caledonia in the ferry line were the Fiji Islands, useful both as an aircraft staging area and as a naval anchorage. Responsibility for their local defense had passed to New Zealand early in the war; now the Combined Chiefs reaffirmed this original arrangement and determined that, in addition, the United States should assist New Zealand by providing air defenses and equipment. Substantial quantities of the materiel necessary for Fiji defense already had been supplied out of U.S. stocks, with the remainder coming from British sources.²² New Zealand had sent most of the personnel for the garrison of Viti Levu, increasing her forces on that island to approximately 10,000 troops by May 1942, at which time the total U.S. Army forces consisted of 25 pursuit planes and 600 men, including personnel for operation and maintenance of air-dromes at Nandi.²³

To provide for the relief of the New Zealand forces and to assure Allied grasp upon these strategic islands, the United States on 13 May assumed responsibility for their defense, and immediately initiated action to send strong reinforcements to the Fijis. Under the joint Army-Navy plan, approximately 15,000 men of the 37th Division were to begin movement about 17 May from the west coast of the United States in a six-vessel convoy. Also scheduled for eventual

shipment to the Fijis were 1,660 Army service troops, naval forces totaling 1,800 (1,500 for an air base detail, including personnel for one aircraft carrier group and for twenty-five PBY's, and 300 for local defense of ships and installations), and the flying echelon of the 70th Bombardment Squadron (M), which was expected to arrive in July.²⁴ Already the ground echelon of the squadron had sailed from Brisbane on 17 May.²⁵

With the gradual establishment of strong American forces in New Caledonia, in the adjacent New Hebrides, which once had been considered as an alternate to New Caledonia, and in the Fiji Islands, the prospects of holding the lines of communication between Australia and the United States—and consequently the outlook for the forces in Australia—became much brighter. In order to make the Allied position even more secure, a joint Army-Navy plan was instituted for reinforcing Tongatabu, 500 miles southwest of Samoa and the southernmost island of the Tonga group. So long as the line New Caledonia-Fiji-Samoa was maintained, it was improbable that Tongatabu would be attacked by a major enemy force; but the base could be of extreme strategic importance as an alternate staging point between the United States and the Southwest Pacific Area, and as an outpost to prevent enemy attacks upon the Fijis and Samoa from the south.²⁶ It was therefore planned that Army troops totaling 292 officers, 6,189 enlisted men, and 52 nurses, and naval forces totaling 83 officers and 1,689 enlisted men who would be withdrawn upon completion of the air base, would sail from the United States about 6 April, while air force units totaling 58 officers and 606 enlisted men were to be taken from the American forces in Australia and dispatched in order to arrive at Tongatabu by 15 May. In conformance with this plan, the 68th Pursuit Squadron sailed from Brisbane on 8 May, disembarking at Tongatabu on the 17th; seventeen days later, the last of the squadron's twenty-five P-40E's had been assembled and test-flown.²⁷

The Question of Island Defense

As the ground, naval, and air forces moved to their stations along the island chain, it was apparent that there was no clear agreement in Washington as to the ultimate strength necessary to hold these bases. This confusion over the statistics of defense arose from a larger disagreement over the relative importance of war in the Pacific with respect to the global war. Even prior to the Japanese attack which

precipitated the war, the U.S. Navy had taken a stand against immediate and large-scale preparations for an offensive against Germany. It considered that since the prime strength of the United Nations lay in naval and air categories, profitable strategy should contemplate effective employment of these forces; ground forces should be thrown against regions where Germany could not exert the full power of her armies. Application of this policy obviously pointed to the Pacific as the preferred area of operations. The Army, on the other hand, held the opinion that such strategy might not accomplish the defeat of Germany and that it would be necessary to challenge German armies on the continent of Europe.²⁸

At the same time, there was general agreement between the services that if Australia and New Zealand were to be supported the sea and air communications which pass through the South Pacific must be made secure. Australia and New Zealand were vital as bases for future operations, and loss of either or both would vastly multiply the difficulties of any future offensive against Japan.²⁹ Samoa was recognized as occupying an important linking position; it must be held, as must the bases so rapidly reaching a state of completion on the smaller islands along the way. In their conclusion the Joint Chiefs of Staff squarely faced the problem which was destined to plague all future discussion of air power for the Pacific: because of the shortage of shipping and the current lack of large forces in various categories, any strengthening of the deployment against Japan would be at the expense of the effort which otherwise might be thrown against Germany. It was concluded that the forces for offensive action in the United Kingdom and those for defensive action in the Pacific should be built up simultaneously.³⁰

With these hard facts before them, Army and Navy representatives made their initial over-all recommendations for all the island bases between Hawaii and Australia, and their suggested allocations went well beyond those proposed by the Combined Chiefs back in January. The strengths for Christmas and Canton remained the same, twenty-five pursuit aircraft in each case; Palmyra would become completely a naval responsibility, as would Borabora and as Samoa was in the earlier plan. Tongatabu now was an AAF base for twenty-five pursuits, and Efate was similarly designated as a base for an AAF pursuit squadron of equal strength.* But in the case of Fiji and New Cale-

* See map, p. 429.

donia, the planners greatly exceeded their former estimates. For Fiji it was now proposed that the AAF base twenty-six medium bombers on Viti Levu and no less than fifty-five fighters, while New Caledonia would carry the very considerable force of thirty-one medium bombers and eighty fighter aircraft.³¹ Even these substantial increments appeared inadequate to some of the joint staff planners, who believed that a far heavier increase than that recommended was necessary to prevent an early collapse of the entire situation in the Pacific area.³²

As the discussion progressed, it was apparent that the line of islands was not yet secured throughout its length, but in those cases where air strength was lacking it either was projected or en route. By 17 March, Fiji, Christmas, and New Caledonia had one squadron each of twenty-five fighter aircraft, and twenty-five additional fighters of the 68th Squadron were in Australia scheduled for movement to Tongatabu. Efate still lacked air strength, but twenty-one Marine fighters currently in Hawaii were scheduled to arrive at that island as soon as the landing field became operable, estimated between 1 and 15 June, and these were to be supplemented by a pursuit squadron with its necessary ground services, all of which were to come from Australia.³³

By April, construction of the bases was well along and some measure of protection had been provided for most of them, but it was questionable that any of them alone would be able to resist a determined and powerful Japanese attack. Accordingly, the Joint Chiefs of Staff directed that joint staff planners should summarize and integrate all previous studies concerning defense of the South Pacific. Specifically, they desired an assessment of the number of bombers of all types required to provide a mobile defense for all the island bases along the line of communications, the time required for concentrations of a bomber force, the available landing fields, and the minimum fighter, ground, and antiaircraft facilities necessary for effective opposition.³⁴

It was quite apparent that the question of garrisoning the islands involved two conflicting theories.* One doctrine, that of the Army Air Forces, emphasized the concept of mobility. General Arnold and the other AAF spokesmen were fully cognizant of the strain which the European and Pacific theaters were throwing upon AAF re-

* A subject to be discussed at greater length in Vol. IV.

sources; therefore, available aircraft, to be employed to the fullest advantage, should not be deprived of that freedom of movement which was regarded as one of the greatest assets of air power. Binding air striking units to fixed assignments across the Pacific in an effort to maintain a point, or limited defense, such as the Navy desired, would nullify the high strategic mobility of these units; in this event they would be deprived of the power of decisive action which otherwise they might contribute through concerted operations. Certainly such a policy, if applied in the Pacific with its multiplicity of bases, would become prohibitively costly in terms of national resources.³⁵ The AAF spokesmen maintained that the ferry route constituted an extreme case of a defense area which was linear in type and of limited depth; in the assignment of air forces to such an area, sound strategic procedure dictated basing the major air striking elements at the extremities of the line. Meanwhile, by the development of suitable intermediate bases and logistical services, it would be possible to provide for the rapid concentration of the air units against any threat which might develop along the undefended portions of the line.³⁶ The debate continued.

The Tokyo Raid

All these plans and debates were necessary preliminaries to action, but plans alone do not win wars, nor do they sustain morale, for by their very nature they can be known only to a small circle within the topmost level of the military organization. Yet there was dire need of a stimulus to morale during the first weeks following the attack upon Pearl Harbor, which had preceded by three days the further loss to the Allies of the *Prince of Wales* and the *Repulse* off Malaya. One such stimulus was conceived during the dark hours of January 1942, one which projected a strike at Tokyo from the sea. Apparently President Roosevelt himself played a role in initiating the expedition, although it is not possible to determine its original author.³⁷ The scheme involved the launching of medium bombers from a U.S. aircraft carrier which would transport the planes to a point near enough to Japan to permit them to attack Tokyo and several of the larger industrial Japanese cities; from Japan the planes would proceed 1,200 miles farther across the East China Sea to airfields in eastern China, subject of course to the consent of the Chinese government. From this point they would refuel, then pass on to Chungking and so

remain in the Far East under the control of General Stilwell.³⁸ General Arnold chose the leader of the expedition. He was Lt. Col. James H. Doolittle, and his 24 crews were selected from the 34th, 37th, and 95th squadrons of the 17th Bombardment Group* and from the 89th Reconnaissance Squadron. All were volunteers, and there was no effort to hand-pick the personnel; they represented average flight crews of the AAF.

Execution of the plan would place a heavy burden upon the aircraft. A cruising range of 2,400 miles with a 2,000-lb. bomb load would be demanded of whatever plane was chosen, and after due consideration for the merits of the B-26 and the B-25, the choice fell upon North American's B-25. At Eglin Air Depot auxiliary fuel tanks were fitted into the planes, after removal of the lower turrets, and when all additional capacity was filled, including an extra fifty gallons carried internally in five-gallon tins and a collapsible 160-gallon rubber bag in the crawlway, the planes carried 1,141 gallons, of which the pilots could count on 1,100. To lift this weight plus the bomb load off the deck of a carrier presented a problem never before challenged by Army planes. Hence an accelerated training program was instituted at Eglin Field, Florida, where the bombers had arrived by 1 March, and where Lt. Henry F. Miller, USN, instructed the pilots in the technique of short take-offs. White lines on the ground marked out the distances for the pilots, and before concluding the training period, all of them had taken off twice in a 700- to 750-foot run with a plane loaded to 31,000 pounds; they were confident that they could take off from a carrier in their heavy planes. They were to leave behind their Norden bombsights so that they would not fall into enemy hands. In their place Capt. C. R. Greening designed a simple substitute device which he labeled the "Mark Twain," and this was the bombsight carried on the mission. For "protection" from astern, two wooden .50-cal. machine guns were installed in the extreme tip of the tail, and, to record the flight, each plane carried either a still or a movie camera.

Bombing training was conducted primarily from 1,500-foot altitudes, with the planes approaching at minimum level, then making a quick pull up to the desired level; but there was scarcely any time for adequate gunnery practice. Nevertheless, on 24 March the detach-

* At that time assigned to the Eighth Air Force. See below, p. 614.

ment was ordered to report at the Alameda Naval Air Station, on San Francisco Bay, with a stopover at the Sacramento Air Depot, where twenty-two aircraft arrived by the 27th.³⁹ Four days later the planes reached Alameda; as yet no aircrew knew its ultimate objective.

While the crews trained at Eglin, negotiations proceeded through the CBI command in an effort to make certain that Chinese fields would be prepared to receive the B-25's. Extreme secrecy surrounded the project, making it impossible to impart full information to Chiang Kai-shek, who only reluctantly gave his final consent to the project on 28 March without ever knowing the details, except that by 2 April he was informed that at least twenty-five B-25's would be employed and that he should have fuel and flares ready at Kweilin, Kian, Yushan, Chuchow, and Lishui.⁴⁰ The Chinese leader sought to delay the flight until late in May, which would give him opportunity to arrange his troops so as to prevent Japanese occupation of the Chuchow area, and right to the end he refused to permit the use of the field at Chuchow. But the machinery was under way, and once the carriers had put to sea, it no longer was possible to alter the original plan.

Back at Alameda, on 1 April, sixteen B-25's, instead of the twenty originally scheduled, were lifted aboard the *Hornet*, where they were lashed down on the flight deck. Next day, carrying 71 AAF officers and 130 enlisted men, the *Hornet* passed out through the Golden Gate, accompanied by two cruisers, four destroyers, and an oiler. After a rough voyage beset with foul weather most of the way, north of Midway the task force joined a similar one which had come up from Pearl Harbor, and together the two, consisting of two carriers, four cruisers, eight destroyers, and two oilers, headed west toward Japan under Vice Adm. William F. Halsey in the *Enterprise*.

Doolittle hoped to reach a point 450 statute miles from Japan but believed it possible, if necessary, to take off from 550 miles. He felt a point 650 miles from Japan would be the outside limit of any reasonable prospect for success.⁴¹ Presumably the airfields in Chekiang were to be made ready for arrival of the planes not earlier than 0400 on 20 April. If they were not readied, the aircrews could not be warned—nor could the Chinese be informed of the time of take-off from the carrier—because Navy task forces followed a policy of absolute radio silence when at sea on such missions. On the 16th, when the B-25's were spotted for the take-off, the leading bomber—Doolittle's—faced

467 feet of clear deck and the last plane hung precariously out over the stern ramp of the carrier; there was no spare space on the *Hornet's* flight deck.

Early on the morning of 18 April, the task force encountered the first of the enemy's line of pickets; by 0738 a patrol vessel was sighted. Now that secrecy had been compromised, and apprehensive that enemy bombers would strike the surface force prior to the launch, Halsey ordered the B-25's off at 0800, some ten hours prior to the original plan, which had contemplated a late afternoon departure and a night attack. Furthermore, the entire task force was one full day ahead of the schedule originally sent out to the Chinese. And instead of the 650 miles foreseen as a maximum distance to the targets, the aircrews now faced approximately 800 statute miles of flight before they would reach Tokyo.⁴² But this contingency had been foreseen and it had been agreed that rather than endanger the carriers, the planes would be sent off despite the remote chance that they could reach China from such a distance. The crews entered their planes amid some minor confusion caused by the rush of last-minute preparations, and at 0818 local time Colonel Doolittle made his run down the plunging deck into a 40-knot gale, which was sending green water over the bows and wetting the flight deck. Never before had this been accomplished, yet now it was carried off without a hitch. By 0921 the sixteenth plane had taken off and was on its way toward Japan. After launching the planes, the *Hornet* and the *Enterprise* escaped without interference, although a Japanese force of five carriers returning to the homeland from Ceylon was alerted near Formosa and attempted to intercept them.⁴³

Although the patrol boat had warned of the approaching American carriers, Japanese intelligence, not anticipating that the attack would be made from such a distance, had not expected a raid before the following day.⁴⁴ Thus the bombers were unopposed as they swept in low over the coast on their way to Tokyo, where an air raid drill was in progress. A full air raid alert was not effected until after the attack was opened at 1215 by Doolittle in the lead plane, who unloaded his incendiaries upon the Japanese capital. Almost at once he was followed by Lt. Travis Hoover, attacking from 900 feet with three 500-lb. demolition bombs, which, with the addition of a single incendiary cluster, constituted the bomb load of the majority of the bombers.⁴⁵ Plane after plane roared over Tokyo, bombing and firing

oil stores, factory areas, and military installations, while others went on to strike at Kobe, Yokohama, and Nagoya. At least one bomb from Lt. Edgar E. McElroy's plane hit the carrier *Ryūho* * resting in a dry dock at the Yokosuka naval base; ⁴⁶ bombs from other planes fell into thickly settled districts. Despite the best efforts of the enemy AA gunners, only one bomber was hit, that of Lt. Richard O. Joyce, and even this hit caused only minor damage. Of the sixteen planes in the raid, fifteen had bombed installations in Japan and all sixteen safely left the home islands. But circumstances beyond the control of the aircrews were against the flight.

Although a fortuitous and unexpected tail wind helped to drive the bombers across the East China Sea toward the field they sought at Chuchow, over China the weather was thick and the hour was late; in darkness and rain and cloud, one after another, the bombers either crash-landed or were abandoned by their parachuting crews on the night of 18 April. Of the fifty men who parachuted, forty-nine reached ground safely and were recovered by Chinese and led to safety, as were ten more who had come down in their planes along the coast; only Cpl. Leland D. Faktor was killed in his leap. One plane landed in the sea along the coast and one in a rice paddy, both without scratching their crews; but another, piloted by Lt. Ted W. Lawson, was badly smashed as Lawson attempted to land on a narrow beach. Every man in its crew was injured, some almost fatally. The B-25 piloted by Capt. Edward J. York had gone to a point twenty-five miles north of Vladivostok, and its crew was interned by the Russians. Planes piloted by Lts. Dean E. Hallmark and William G. Farrow both came down in enemy-held territory; of these crews, two men apparently drowned in escaping from one plane, Lts. Farrow, Hallmark, and Sgt. Harold A. Spatz all were executed on 15 October 1942 after trial by the Japanese, and Lts. Robert L. Hite, George Barr, Chase J. Nielson, and Cpl. Jacob Deshazer were recovered at the end of the war after a long detention in enemy prison camps. One man, Lt. Robert J. Meder, died late in 1943 while in the custody of the Japanese. Thus ended the Doolittle raid on Japan.

An assessment of the mission is difficult. All sixteen bombers had been lost, though not one to enemy action, and fourteen crews had come through alive. Eight of the planes had bombed their primary targets, inflicting varying amounts of damage upon them; five others

* Not to be confused with *Ryūjo*.

LANDING FIELDS
TARGETS

C H I N A

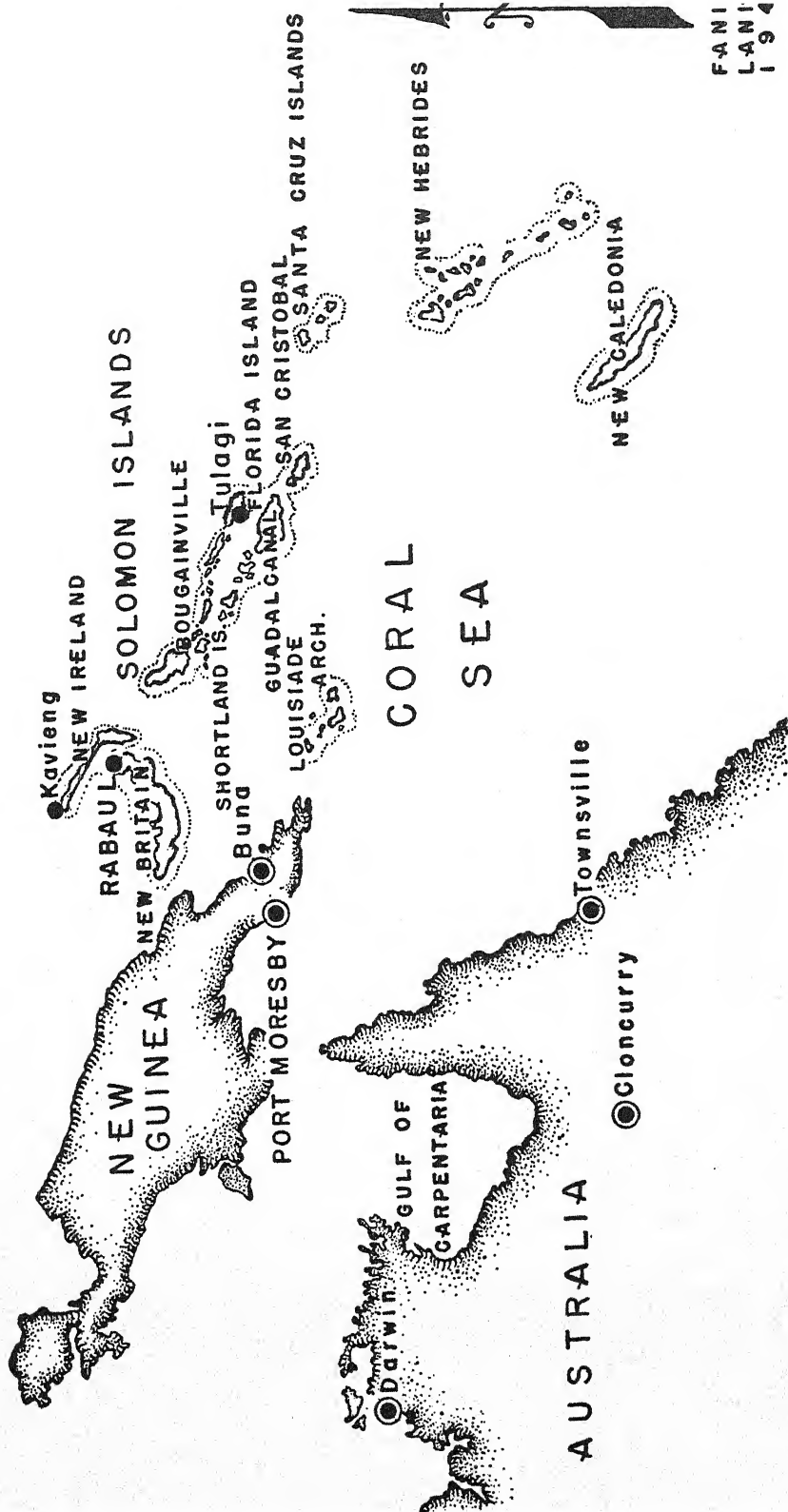
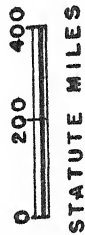
THE TOKYO MISSION



struck secondary objectives on the Japanese mainland, and enemy reports indicated that the missing planes also bombed their targets. Some honest errors of bombing and gunnery had occurred when bombardiers overshot their marks, sending bombs into thickly settled districts, and these were used by the Japanese to justify the subsequent execution of the captured men. On the positive side, the mission had demonstrated the feasibility of launching heavily loaded medium bombers from carriers at sea under actual combat conditions, although it should be remembered that such an attempt was not repeated during the war. Upon the Chinese the effects were most unfortunate, for not only had their theater lost the future use of the sixteen bombers, but they soon lost their eastern airfields to the Japanese, who advanced upon Chuchow from the Hangchow area on 15 May. Within a short time the fields at Chuchow, Yushan, and Lishui had fallen into enemy hands. If the mission was designed permanently to depress enemy morale, it probably fell short. It was too light and could not be followed by a sustained effort, but significantly enough it did cause the Japanese to give serious thought to improvement of the homeland's defenses and led them to retain four army fighter groups in Japan during 1942 and 1943 when they were urgently needed in the Solomons.⁴⁷ What was probably the greatest achievement of the Doolittle raid is the most difficult to assess. The prevailing evidence, however, indicates that it came at just the time when Japanese army and navy leaders were debating the advisability of further expansion beyond their originally defined defensive perimeter. The raid seems to have lent additional weight to the arguments for pushing out the defensive line—to rest perhaps even on Midway, New Caledonia, and the Aleutians.⁴⁸ Finally, the Tokyo raid was a hypodermic to the morale of the United States, which had suffered the worst series of military reverses in its history.

The Coral Sea

While the secretaries of the staff planners in Washington exchanged proposals concerning the fate of the South Pacific islands, Japanese generals and admirals debated the strategy by which they most effectively might preserve their newly won southern empire. From later interrogations with some of the participants in these debates, it is possible to reconstruct the broad outline of their plans. They, like the Allied planners, faced divergent opinions within the



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highest councils: where were they to draw the final perimeter with its outermost line of defenses? The question was of vital importance, for it determined in large part the locale of the initial clashes with U.S. forces as soon as the inevitable counterattacks began. Generally, it was the imperial navy which stressed the advantages of establishing a perimeter at the maximum possible distance from the industrial heart of the empire; for not only would this plan provide additional time and space in which to fend off American assaults which were sure to come, but it served Admiral Yamamoto's strong conviction that his only hope of success lay in bringing about an early full-dress naval engagement with American forces. The aggressive commander of the Japanese Combined Fleet favored this decisive fleet action at the earliest possible date, because he realized that with the passage of time American production would outstrip that of Japan, thereby creating a fatal disparity between the two naval establishments.⁴⁹ The Japanese army, on the other hand, seems to have opposed this tendency toward overexpansion in the Pacific, stressing the advantages of maintaining a tight, compact empire operating along interior lines, fed by the resources of the Netherlands East Indies and defended on the east by a naval force whose commitments were more nearly in proportion to its strength. The latter plan did not prevail. It was the navy's theory which gradually gained ascendancy, and by March and April both army and navy were examining their outposts in the east and south with a view to strengthening them.

If the Japanese in their planning conducted prior to the war had hesitated to rush too far afield in fixing the limits of empire, the results of the first four months of fighting indicated that their initial calculations and timetables had been exceeded; the victories had come easily, the cost had been inconsiderable, and Allied resistance had proved unexpectedly light.⁵⁰ This very ease and rapidity of conquest seems to have been a strong factor in influencing the Japanese navy toward fresh ventures in the spring of 1942.⁵¹ The first step occurred in connection with the defense of Rabaul, the strategic base located at the junction of New Britain and the upper Solomons which the navy had marked out as one of its goals prior to the outbreak of the war. The place had been taken on 23 January, together with Kavieng on New Ireland, but there was a difference of opinion as to how it should be strengthened; the question was not whether the Rabaul base should have its own advance posts, but how many and at what

distance. One faction favored halting at the Shortland Island area, off the southern end of Bougainville, while another advocated expanding all the way down to the New Hebrides with the intention of severing the South Pacific line of communications between the United States and Australia. The final compromise of the local command settled on taking the entire chain of the Solomons.⁵²

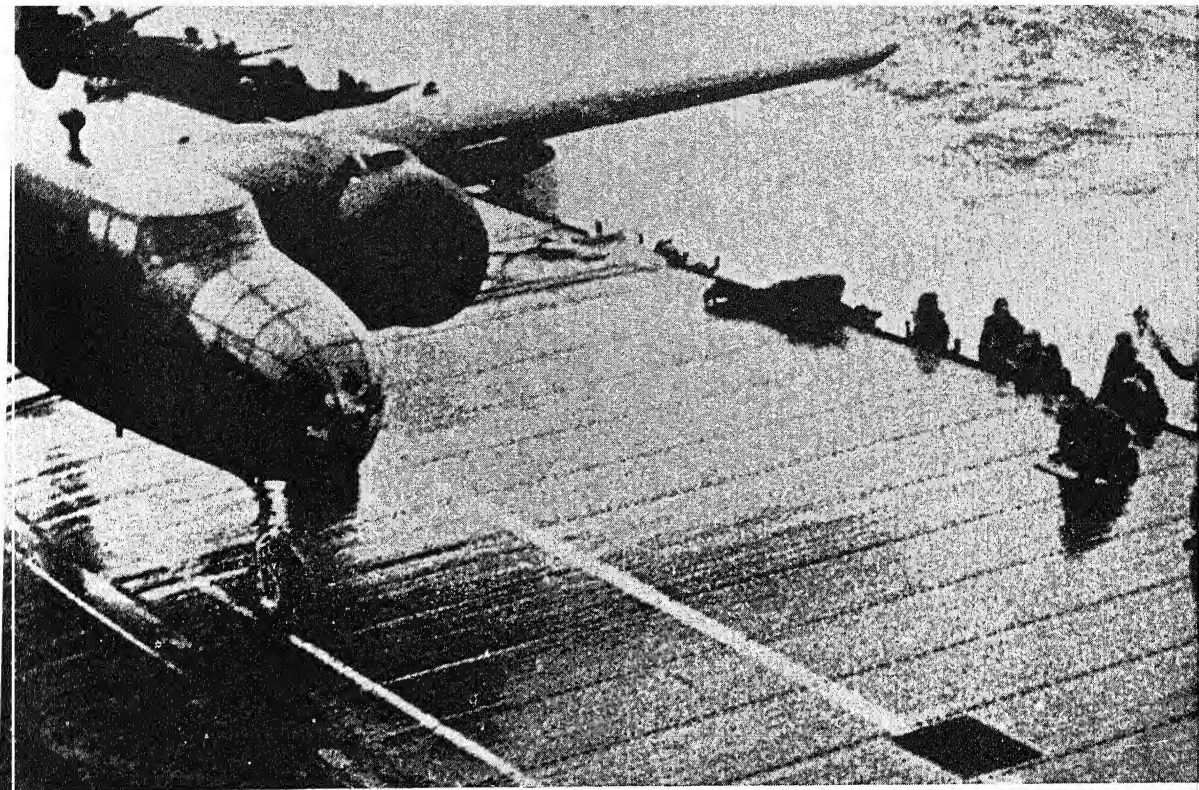
As early as February, the U.S. Navy had definite indications of an enemy offensive which might extend down the Solomons to New Caledonia or Fiji, and though as yet there were few combat surface units in the Rabaul area, by mid-April the Japanese were moving forces into Palau and Truk, obviously preparing for a thrust to the south.⁵³ Anticipating that the operations would commence around 28 April, the U.S. Navy assumed that the enemy would attempt a sea-borne invasion of the lower Solomons, or Port Moresby, or both. The assumption was correct in both cases. Early in May an enemy force moved down to Tulagi on Florida Island, lying directly across the Sealark Channel from Guadalcanal, where the Japanese immediately set about preparing a seaplane base for use in operations against New Caledonia or Port Moresby. The primary goal now was Port Moresby, whose capture apparently was regarded by the Japanese army as a relatively simple operation and by the navy as necessary for the security of Rabaul.⁵⁴ Certainly Moresby was a key point, for if it was useful to the Japanese, to the Allies it was the key to defense of northern Australia and a point of departure for future offensive operations against the Bismarck Archipelago. In preparation for the move against Port Moresby, in May the enemy moved his Genzan Air Group with twenty-seven planes and 300 flying personnel into Vunakanau at Rabaul, and on eight of the twelve days preceding 7 May, Japanese bombers carried out heavy air attacks on Port Moresby.⁵⁵

Rapidly, during the first week of May, Allied forces rushed to meet the thrust. On 1 May two U.S. carrier task forces, built around the *Lexington* and the *Yorktown*, rendezvoused 375 miles south of San Cristobal Island, while at Townsville and up at Port Moresby the medium bombers of the 13th and 90th squadrons, A-24's of the 8th Squadron, and B-26's of the 22d Group (M) were prepared for the anticipated strikes. B-17's of the 19th Bombardment Group's 435th Squadron, based at Townsville and staging through Moresby, scoured the sea lanes leading down from Rabaul, flying all the way to Kavieng on the 2d.⁵⁶ On the evening of 3 May, Rear Adm. Frank J. Fletcher

received reports that the Japanese were occupying Florida Island from their transports lying in Tulagi harbor, and he resolved to strike at once with his *Yorktown* squadrons. At 0845 on the morning of the 4th, the attacks began upon Tulagi, and the enemy was surprised, losing at least one destroyer, several smaller craft, and suffering damage on a minelayer, though the carrier's pilots placed the losses somewhat higher.⁵⁷ But this represented only a minor sting, for the ultimate enemy goal was Moresby, toward which the Japanese Admiral Hinoue had dispatched an occupation force of approximately five transports from Rabaul, plus a direct support force of four cruisers and the escort carrier *Shoho* from Buin.⁵⁸ *Shoho's* planes were to defend the transports, but swinging down around the eastern side of the Solomons was the Japanese navy's Carrier Division Five, including *Zuikaku* and *Shokaku*, two of the navy's newest; it would defend the entire Port Moresby occupation force, attack the U.S. carriers which the Japanese expected, and raid the Townsville area in an attempt to destroy Allied aircraft and shipping there.

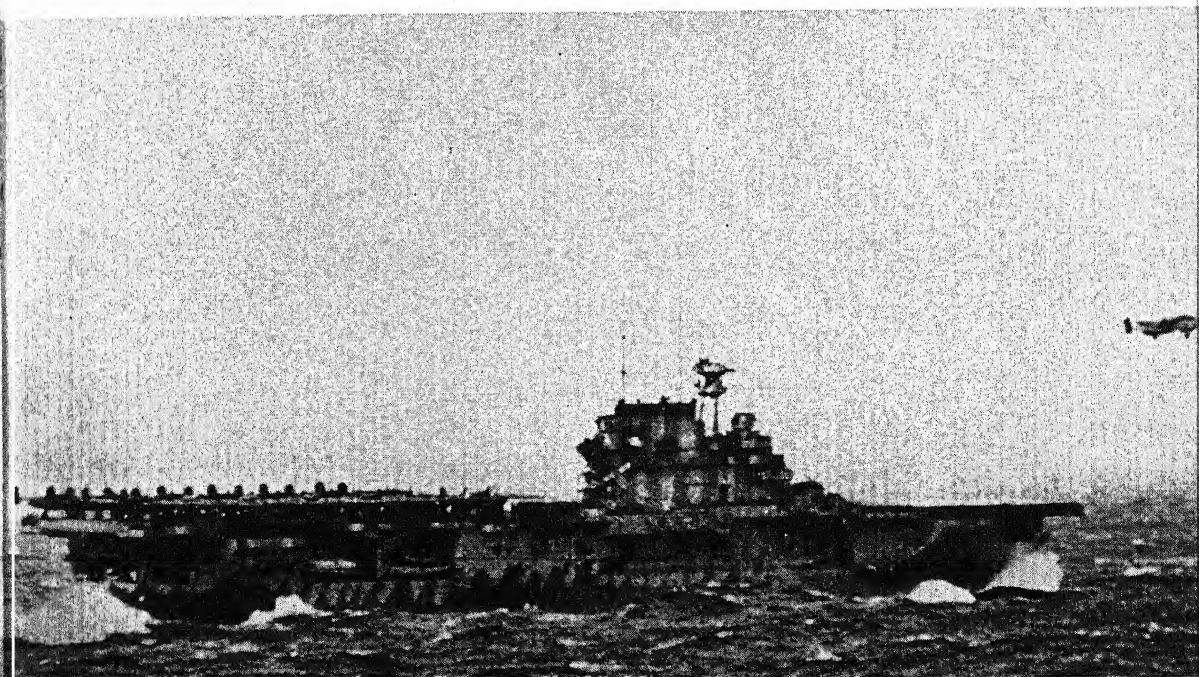
Out from Townsville and Moresby the B-25's and B-17's conducted their searches, and on 4 May a B-25 of the 90th Bombardment Squadron reported the sighting of a carrier and two heavy cruisers east of Port Moresby.* The plane, driven off by a swarm of fighters, lost contact. Next day another B-25 contacted a carrier south of Bougainville, shadowing the vessel for an hour and five minutes while sending out homing signals, hoping to guide B-17's to the target.⁵⁹ At Townsville the 435th's B-17's were reinforced by four planes from each of the squadrons of the 19th Group, while at Port Moresby 19 A-24 dive bombers were put on stand-by ready to carry their 500-lb. bombs against the enemy convoy coming down off Misima Island, in the Louisiade Archipelago.⁶⁰ They were never needed, for on 7-8 May the two Japanese forces were met by the U.S. carrier groups in the first of the fleet air engagements which were to characterize nearly all the Pacific naval actions. On the morning of the 7th, one of *Yorktown's* scouts reported the sighting of two heavy and two light cruisers, but because the message was improperly coded, the combined air attack force was launched from the two carriers in the belief that two enemy carriers had been located. Meanwhile, the land-based

* Allied Air Forces daily reconnaissance reports for 4 and 5 May show sightings of carriers with other heavy vessels on each of these days. The Navy's lack of knowledge of these sightings is unexplained.



A B-25 READY FOR TAKE-OFF FROM USS *HORNET*

ONE OF THE B-25'S TAKES OFF



land-based planes had carried out extensive reconnaissance of the Solomons area from New Ireland southeastward to the eastern boundary of the Southwest Pacific Area: they flew armed patrols along the New Guinea coast eastward to the Louisiade islands and thence westward to Port Moresby, over the Coral Sea west of Tulagi, throughout the Bismarck Archipelago, across the mouth of the Gulf of Carpentaria, and in the Darwin area. Operations were hampered somewhat by unfavorable weather, by the great distances which had to be flown, by the absence of fighter protection for bombers, and by the inability of the B-17's to hit rapidly moving surface targets from high altitudes when bombing singly or in small flights.⁶⁷ The entire action had indicated a lack of co-ordination between the Navy and the AAF which under different circumstances might have cost the Navy more serious damage than it suffered at the hands of the Japanese, for in the Coral Sea, some of the AAF planes had dropped their bombs upon friendly ships.

One week after the battle, General MacArthur reported that complete co-ordination with naval forces had been attained.⁶⁸ Yet, if co-ordination did exist, it was at a point which never reached the aircrews, for on the operational level there was little or none, and this was a factor which had hampered the forces in Australia in their attempts to operate with the Navy. Men of the 19th Group were forced to admit that they had attacked U.S. naval units, but they pointed to a reason. Few of them had received adequate training in recognition of surface craft as they fought through the Philippines and Java campaigns, but more important, none of the intelligence officers had any information as to the location of the friendly task forces; nor had any identification signals with surface craft been established beforehand.⁶⁹ This lack of information on naval plans worked a very real hardship on the bombardment commanders. Prior to the May battle, they were unaware either of the Navy's presence or of its plans. They knew only that occasionally they would be requested on short notice to co-operate in a naval operation, but because the striking force was widely scattered along the rail line between Townsville and Cloncurry, it was necessary to fly the aircraft some 600 to 800 miles to Port Moresby, where they were refueled in preparation for missions at dawn on the following day. However, it was necessary for them to reach Moresby by dusk, for otherwise there was inadequate time for the refueling necessary to comply with the Navy's request.⁷⁰

These were difficulties which could be overcome with the passage of time, and for the most part they were overcome as the war progressed and as improved channels of communication between the services were developed. But the results of the Coral Sea action left a sense of frustration among the AAF crews who had participated in this engagement against the Japanese.

Midway

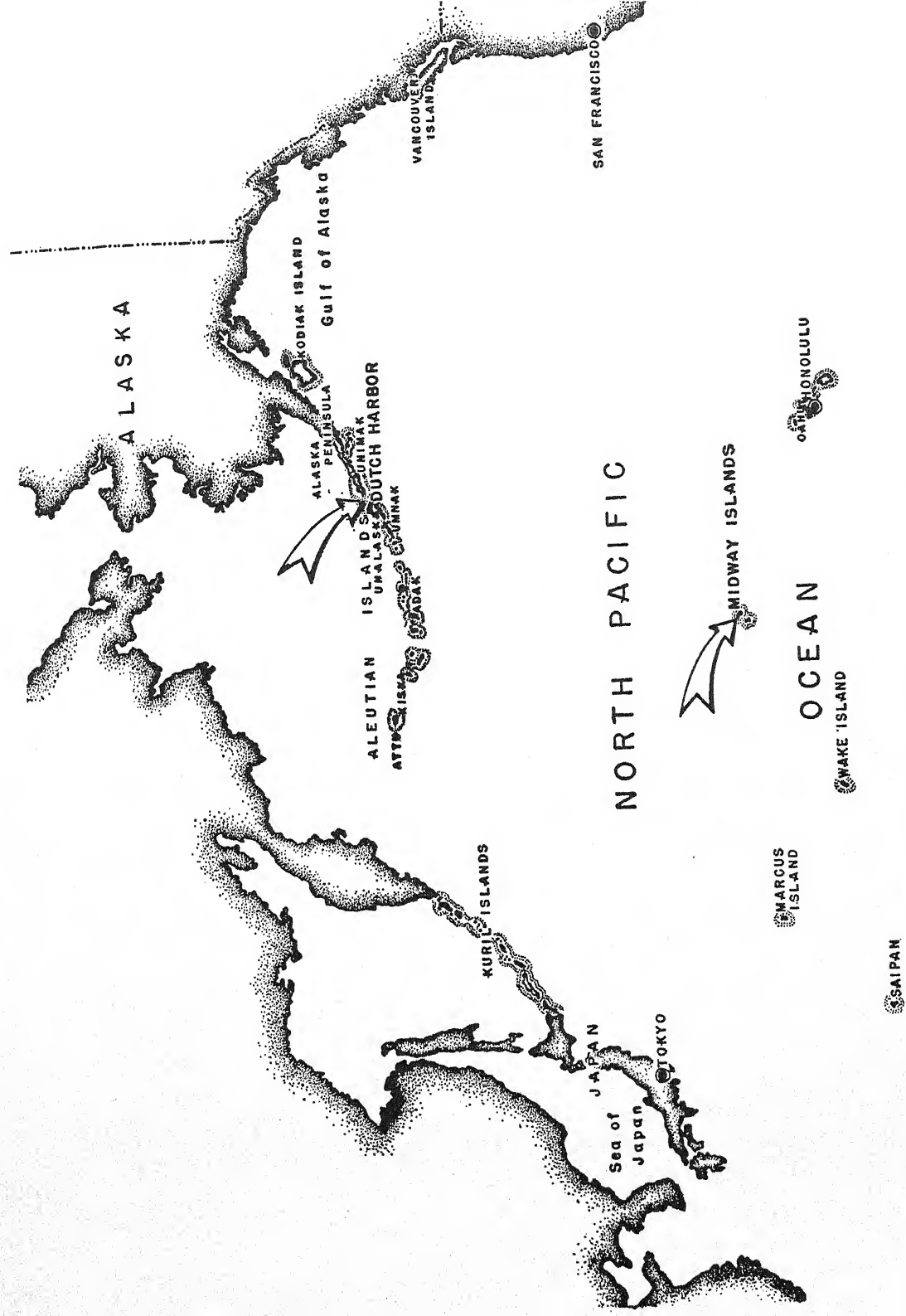
The Coral Sea battle represented the last full-scale attempt of the enemy to extend his perimeter to the south by direct amphibious assault, excluding his effort to recover Guadalcanal in November 1942, but even as his task force retired northward, preparations were under way for additional thrusts. This time the Japanese would drive to the north and east, and their goal would be the establishment of outposts on Midway and in the outer Aleutians. These represented extremely ambitious operations, but even after the rebuff in the attempt to capture Moresby, there was reason to anticipate success, for the Japanese fleet remained in sound condition, very little of its strength having been sapped in the Coral Sea. To be sure, it would be impossible to use Carrier Division Five, for the *Shokaku* had to go to Kure for repairs and the *Zuikaku* required rehabilitation of her air personnel before she could sortie again.⁷¹ But ample carrier pilots and planes were available for all the others, and Admiral Yamamoto was prepared to throw almost his entire force at Midway.

His reasons are not altogether clear. One aim seems to have been the extension of the eastern outpost from Wake to Midway simultaneously with the establishment of a northern picket in the Aleutians. Midway would serve as a useful base for air co-operation with the fleet, since like Marcus and Wake, it could support search planes; and Yamamoto believed that possession of bases at such a distance was essential to the over-all success of the navy's plan,⁷² for an attempt to take Midway might provoke the desired major surface engagement with the U.S. fleet. Then to these considerations must be added the effect of the Doolittle raid on Tokyo. Although some thought seems to have been given early in the war to the seizure of Midway, the B-25 attack upon Tokyo confirmed the need for eastward expansion in order to deprive U.S. forces of every possible base which might serve as a springboard against Japan.⁷³ Before Yamamoto could undertake his venture, however, he first had to overcome the resistance of the

imperial general staff to the plan. After some discussion, the views of the admirals prevailed and the enormous collection of surface power was set in motion. Beyond Midway lay Hawaii; perhaps it, too, could be brought under attack at a later date if all went well. At any rate, it was believed that successful occupation of Midway would increase the probability of drawing out American heavy units.⁷⁴

Back at Pearl Harbor, Adm. Chester Nimitz, commander in chief of the Pacific Ocean Area, could not know of the debates in the upper levels of the Japanese command. However, by 15 May naval decoders and intelligence officers were aware that a blow was coming. They knew that an attempt would be made to occupy Midway and points in the Aleutians, although nothing was known as to enemy intentions against Hawaii, a point upon which the Japanese themselves were uncertain. The exact date of the offensive was not known, but it was believed that the fleet would begin to move out from Japan and Saipan around 20 May.⁷⁵ For Admiral Nimitz, there was a very slender margin of time remaining in which to mobilize all possible defenses. There was no assurance that the three carriers in the South Pacific could be returned to Hawaii in time to protect Midway, and it was necessary to meet the threat to Alaska by dispatching northward all available spare combat ships, a force which included five cruisers and four destroyers.⁷⁶ AAF participation in the approaching battle would be the responsibility of the Seventh Air Force, whose units were receiving reinforcements from the West Coast, but whose strength Maj. Gen. Robert C. Richardson, after extended conferences with Nimitz and Emmons, still regarded as inadequate to assure the security of the Alaska-Hawaii-Samoa-Australia line.⁷⁷

The Japanese had dealt the Hawaiian Air Force a devastating blow on 7 December, destroying its planes, its equipment, and over 200 of its personnel, losses demanding the most rapid possible replacement. But despite all the reinforcements which had come out to the islands in December following the Japanese attack, the Seventh Air Force, as it was designated on 5 February, was not yet an offensive air force—it would not acquire this status until November 1943. For the present, it would remain a holding force which by January could report the presence of 43 heavy bombers, 24 light and medium bombers, and 203 pursuit planes. These would have to suffice. In the ensuing four months, no more planes were to be sent to Hawaii; in fact, twelve of the heavies were withdrawn during February and dispatched to the



Southwest Pacific.⁷⁸ Under Maj. Gen. Clarence L. Tinker, who assumed command on 29 March 1942, the Seventh would assist in the defense of the Hawaiian group, and as rapidly as possible it would train combat crews. As an additional major function, it would modify and maintain aircraft for the combat units in the South and Southwest Pacific.

After Pearl Harbor, one of the first problems to be met was that of servicing and supplying the tactical air units in the Hawaiian area.⁷⁹ While the service units labored to restore some order to the battered force, Lt. Gen. Delos C. Emmons, commanding the Hawaiian Department, appealed to AAF Headquarters for additional planes, and these were sent out as rapidly as possible; fortunately, Emmons was granted a five-month period of grace after the initial Japanese attack. No aerial combat with enemy aircraft occurred during these months, but both fighter and bomber commanders were able to offer several assessments of their equipment and operational techniques. Brig. Gen. H.C. Davidson, commanding the VII Interceptor Command, expressed dissatisfaction with both the P-40 and P-39D as interceptors; neither could operate at high altitudes, and the former had an unsatisfactory rate of climb.⁸⁰ Bombardment commanders learned that the continuous alerts and long-range sea searches conducted from the island bases placed a heavy strain upon flight personnel, making duplicate crews a necessity; and they regretted the lack of opportunity for training their bombardiers and gunners.⁸¹ Admiral Nimitz had placed the VII Bomber Command under control of Patrol Wing Two (Patwing 2), and until 1 April all aircraft were assigned either to search or to a striking force, thus leaving only a bare minimum time free for training. However, on 1 April approximately 25 per cent of the aircraft were made available for limited training.⁸² But neither General Emmons nor Richardson was satisfied with the strength under Army control, which by 1 May was to include 32 heavy bombers on hand with 17 more en route, 9 light bombers, and a total of 182 fighter aircraft, although only 87 of the latter were regarded as of modern types.⁸³

On 18 May, the entire Seventh Air Force was placed on special alert in anticipation of the enemy threat, for an air raid on Hawaii or an attack upon Midway was expected any time after 24 May.⁸⁴ In response to the urgent appeals from the theater, the War Department notified General Emmons that two additional heavy bombardment squadrons of eight B-17E's each, including air combat crews, would

be organized from the 301st and 303d heavy groups in the Second Air Force. The estimated date of departure from the West Coast was 30 May, with completion of movement scheduled for 2 June. Actually, the sixteen crews were drawn from the 303d Group; and after the emergency had passed, these crews returned to the Second Air Force, leaving their B-17's in Hawaii.⁸⁵

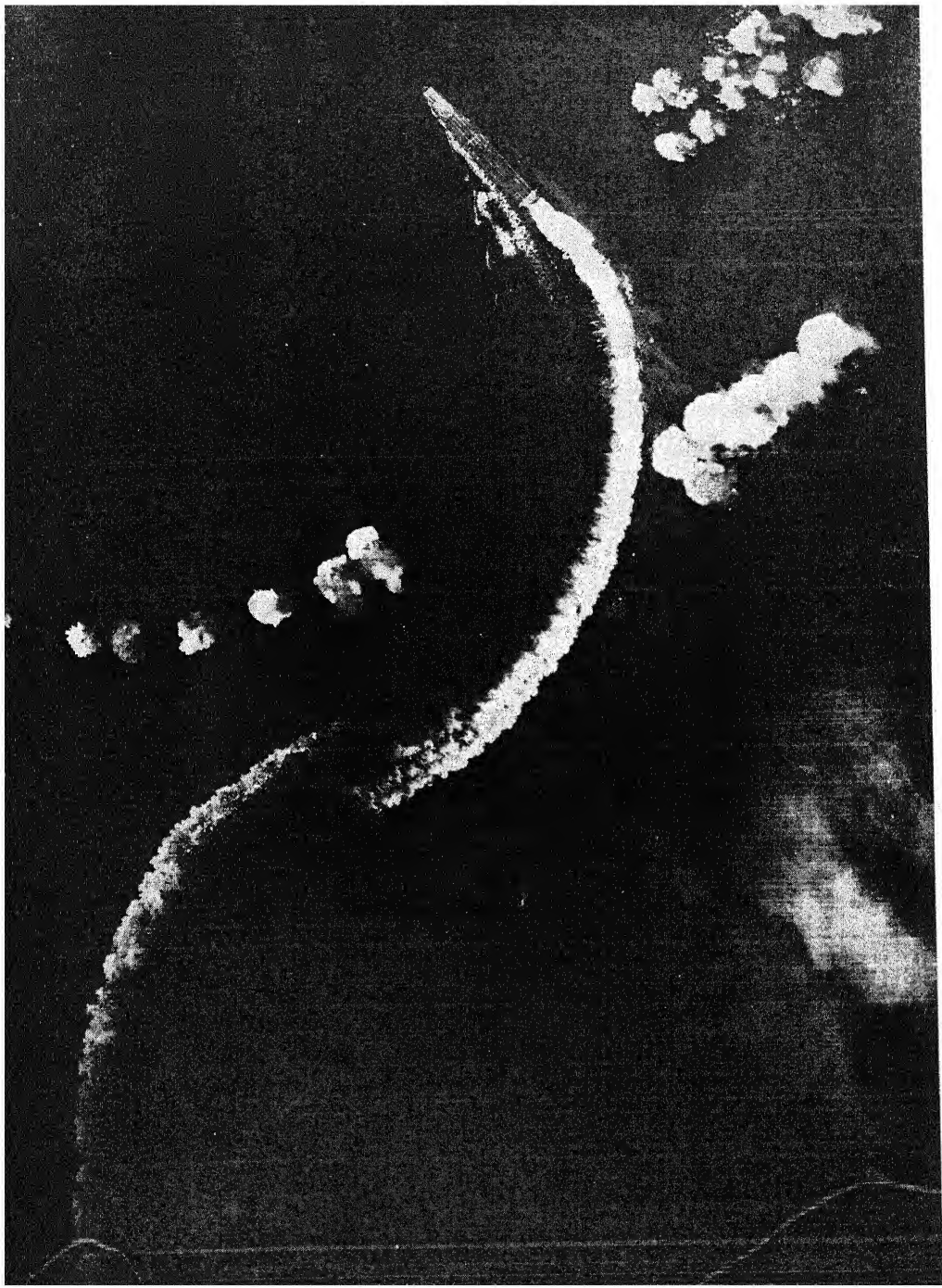
In the ten-day period following the establishment of the alert, the old B-18's flew their search missions, carrying on the work of the newer B-17's which now were held on the ground, loaded with 500- and 600-lb. demolition bombs, in anticipation of their employment as a striking force. On the 18th, General Emmons had on hand for his 5th and 11th Bombardment groups a total of only 34 B-17's, 7 of which were older "C" and "D" models and were regarded as being insufficiently armed for combat. However, through the period of the alert, the VII Bomber Command received a steady influx of B-17's, with the result that by the last day of May it had in commission 44 out of 56 available B-17's, 14 of 16 B-18's, 4 of 6 B-26's, and 5 of 7 A-20's. For local defense, VII Fighter Command had in commission 101 P-40's out of 134 in the area, 17 P-39's of 22, and 22 obsolete P-36's of 28.⁸⁶ Actually, fresh planes were coming out more rapidly than existing squadrons could absorb them; no less than 60 B-17's arrived in the period from 18 May to 10 June. These bombers, arriving from the mainland in the morning, were taken immediately to the shops of the Hawaiian Air Depot, where their extra fuel tanks used on the flight out from the West Coast were removed, auxiliary tanks were installed in the radio compartment, and equipment and armament were checked. Within 24 hours these new planes were turned over to the tactical units, but time was running out; there would be no opportunity to train all the crews in the operation of their new weapons. For example, the heavy increase made it necessary to convert the 72d Bombardment Squadron from a B-18 unit to a B-17 squadron, a process which began on 4 May, but the 72d was not fully equipped until approximately two days prior to commitment to actual combat. Obviously it could not be trained adequately.⁸⁷

At Midway, Marine ground forces worked night and day to prepare the defenses of the islands, and Marine Aircraft Group 22 (MAG-22) based on Midway was brought up to strength to include 28 fighters and 34 dive bombers.⁸⁸ The primary aim of Midway's air commander, Capt. Cyril T. Simard, USN, under whom all AAF planes operated,

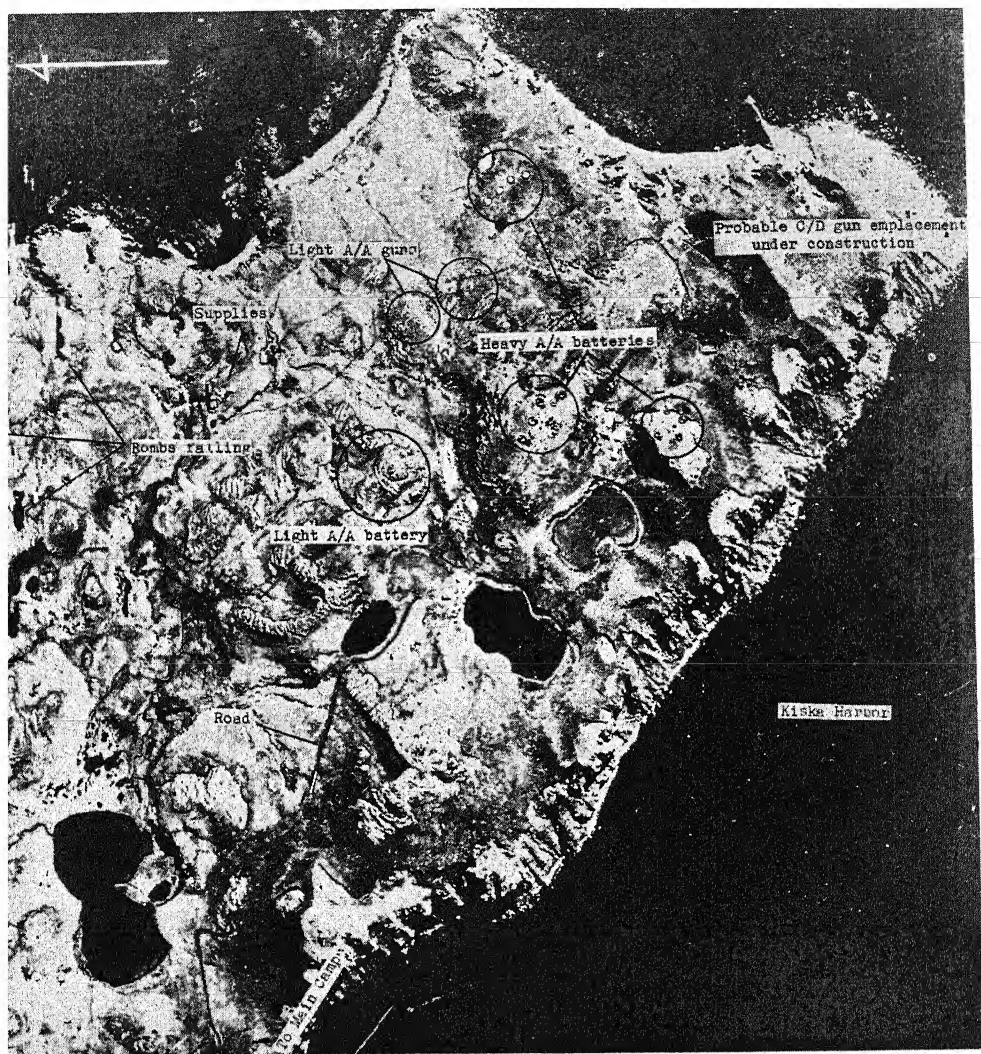
was to discover the enemy fleet as early as possible and to strike it before it could draw within carrier range of the island. Accordingly, on 30 May, in order to place the heavy bombers as far forward as possible, six B-17's of the 26th Bombardment Squadron (H) were flown up to Midway, followed on the next day by six more from the 431st Squadron, two from the 31st, and one from the 72d.⁸⁹ In addition to these forces, two casually attached squadrons en route to the South Pacific, the 18th Reconnaissance and the 69th Bombardment squadrons, each contributed two torpedo-carrying B-26's which were flown up to Midway, along with six of the Navy's new TBF's.⁹⁰ With all these reinforcements, Midway was badly overcrowded. By 3 June, Captain Simard had available on the tiny islet a force of 30 PBV's, 4 B-26's, 17 B-17's, and 6 TBF's, all in addition to the planes of MAG-22. Behind Midway and off to the northeast the carriers *Yorktown*, *Enterprise*, and *Hornet* had rendezvoused on 2 June after racing up from the South Pacific following the Coral Sea action. This was something the enemy did not know and would not know until the dive bombers struck him.

All these forces, every plane, would be needed, for the bulk of the Japanese imperial navy was converging upon Midway; if ever it could break through to the island, it could overwhelm the defenses. From the northwest, under Admiral Nagumo, came a task force of four of the enemy's most effective carriers, supported by two battleships. From Saipan to the southwest, under Vice Admiral Kondo and screened by a powerful surface force including two more battleships, came the transports, carrying approximately 2,500 army troops and special naval landing forces to occupy the two islands comprising Midway; and out to the west of the island aboard the tremendous *Yamato* was Admiral Yamamoto himself, leading the main body of the fleet with most of the remaining heavy units of the imperial navy.⁹¹

The burden of long-range search rested upon the PBV-5A's and the B-17's; twelve of the latter covered long arcs extending 800 miles out from Midway on 31 May and 1 June, but they sighted nothing and they could not cover the area lying beyond 300 to 400 miles northwest of their base, for here visibility was poor.⁹² Their efforts held the flight crews aloft for thirty hours in the two days prior to combat, nor could the crews rest in the intervals between flights, for it was necessary for them to service their own planes, in co-operation with the



JAPANESE CARRIER UNDER ATTACK BY B-17'S, 4 JUNE 1942



JAPANESE INSTALLATIONS ON NORTH HEAD, KISKA, JULY 1942

Marine ground forces on the island.⁹³ Finally, at 0904 on the morning of 3 June, the searchers made the first contact when a patrol plane picked up two enemy cargo vessels 470 miles west of Midway. The stage was set.

What followed was perhaps the most important single engagement of the Pacific naval war. Excepting the role of the submarines, it was exclusively an air-surface action involving the planes of both services, and in which most of the damage to the enemy was inflicted by the dive bombers of the carriers. Superficially, it was the first test of the B-17's as defensive weapons against attacking surface forces, and the first occasion on which the heavy bombers based on Hawaii were pushed out to forward island bases to strike at the enemy in defense of the mid-Pacific. Here, it seemed, was an opportunity at last to test out one of the cherished beliefs of many of the heavy bomber exponents: that the B-17's could stop the carriers.⁹⁴

Preliminaries to the Battle of Midway opened on the afternoon of 3 June, when at 1623 nine B-17E's led by Lt. Col. Walter C. Sweeney, Jr., of the 431st Bombardment Squadron surprised the transport force with its supporting craft some 570 miles west of Midway, dropping 36 x 600-lb. demolition bombs from 8,000 feet. The claims were substantial, including five direct hits and several near misses; they were representative of the scores credited after the subsequent missions of the engagement, for Maj. Gen. Willis H. Hale, who became commander of the Seventh Air Force on 20 June, firmly believed that a fair percentage of the bombs had struck home. Assessment was difficult and in part was based upon the statements of the handful of enemy survivors picked up after the action; not until the war ended and the teams of interrogators invaded Japan was it possible to interview a number of the survivors of this initial action. And even their testimony had suffered from the destruction of records, from the lapse of three and one-half years between the action and interrogation, and from the fact that the Japanese officers reporting were not always aware of the source of the bombs which were dropped upon them. But their evidence indicates the necessity of a radical scaling down of the original claims as sent in by the Seventh Air Force. At any rate, in some cases these enemy officers stood on the decks of the targets and were in a fair way to determine when and by whom they were bombed, better perhaps than pilots who bombed from 20,000 feet and saw tall geysers spout up around their rapidly maneuvering targets, for it has

been demonstrated repeatedly that damage to carriers is particularly difficult to assess from the air. With this in mind, it would seem that the first attack produced a probable hit upon one transport, causing a small fire which was extinguished without delaying the ship, but that the combat craft escaped damage in the attack.⁹⁵

The first blow had been struck without slowing the enemy; but out into the night four PBY's moved toward the transports, found them by radar at 0130 on the 4th, put one torpedo into the tanker *Akebono Maru*, and strafed the column of transports, causing some casualties.⁹⁶

The 4th of June was the day of the real battle. PBY's were off early on their searches for the main enemy force, which had not yet been located; B-17's were in the air; B-26's, TBF's, and MAG-22 planes were warmed and ready. At 0545 the news was in: a patrol plane had sighted many planes heading for Midway at a point 150 miles to the north and west; radars confirmed the report. Seven minutes later, PBY's sighted the enemy's carrier force. Midway was ready. The four B-26's led by Capt. James F. Collins, Jr., and the six TBF's were off to attack the carriers, Marine dive bombers and fighters were sent aloft, and the flight of 14 B-17's already in the air and on its way toward the transports was diverted north against the carriers. At 0705 the B-26's and TBF's sighted the carriers with their supporting heavy ships; they attacked through heavy fighter defense and flak with no fighter support of their own, only to lose two of the B-26's and five of the Navy's new Grumman torpedo planes. Lt. James P. Muri and Captain Collins brought their badly shot-up planes home to Midway after their gallant attack, but they had scored no hits, nor had the TBF's; on this point enemy survivors are unanimous.⁹⁷ All the Japanese carriers were hammered by the B-17's and by dive and torpedo bombers from the three U.S. carriers, and one by one the ships caught fire and sank. The *Soryu* had been hit heavily by dive bombers, then was torpedoed by the submarine *Nautilus* at 1359, sinking at 1610.⁹⁸ The *Kaga*, too, went down a few minutes later, while the *Hiryu*, escaping the earlier attacks, was caught by dive bombers from the *Enterprise* and the *Hornet* late in the afternoon. The ship sank early on the 5th, together with the *Akaga*, but not before it was found by six B-17's en route from Oahu to Midway. The bombers attacked from 3,600 feet at 1610, then strafed the carrier's decks, and claimed hits upon a destroyer.⁹⁹

By the evening of the 4th, the issue had been decided; the enemy's carriers were disabled and sinking, and Yamamoto realized full well that with his air strength gone, he had no alternative but to retire. Even his anticlimactical attempt on the night of the 4th to bombard Midway with the cruiser force was abortive. The *Mogami* and *Mikuma* collided and had to be withdrawn, and fresh disaster overtook this unfortunate pair on the 6th, when dive bombers from the *Enterprise* and *Hornet* caught them, sinking the *Mikuma* and damaging the *Mogami* very heavily.¹⁰⁰

The battle had ended with Midway's installations badly wrecked by enemy bombers but still in American hands and with runways intact. The problem was to assess the damage to the enemy and to examine the weapons which had inflicted it. During the three days, 3 to 5 June, the Seventh Air Force had carried out sixteen B-17 attacks involving a total of fifty-five sorties and one torpedo attack by four B-26's. The heavy bombers had expended 314 x 500- and 600-lb. bombs which had been dropped, excluding the torpedoes, at altitudes ranging from 3,600 feet up to 25,000 feet. Immediately after the action, General Emmons reported that his planes had scored a total of twenty-two direct bomb hits on carriers, battleships, cruisers, and destroyers, that one destroyer had been sunk, and that three torpedoes had struck home on two carriers. In addition, a total of eight Zero fighters had gone down before the guns of the B-17's, two more to the B-26's, and all this had cost two B-26's with their crews, plus two B-17's, of which one crew was rescued, less one man.¹⁰¹

Results of the action revived the discussion over the merits of high-level bombardment attacks upon maneuvering surface vessels, reinforcing the strong measure of skepticism persisting among Navy men, who regarded horizontal bombing as relatively ineffective against this type of target. But there could be no proof until the war had ended, and even then the evidence was not entirely conclusive. Because of the extraordinary amount of discussion and debate arising out of the battle, it is pertinent to examine the conditions and handicaps under which AAF planes had operated. Never were more than fourteen B-17's over a group of targets at any one time, and even these failed to attack the same vessel simultaneously, thus further decreasing the existing slight probability of hits. Furthermore, most of the attacks were carried out by small flights of four planes or less per target, a number far too small

to meet the requirements set by standard AAF doctrine.* Thus, the number of aircraft available fell far below the minimum demanded in order to achieve a profitable pattern for attaining hits upon even one carrier maneuvering at high speed, causing air commanders to feel that severe criticism of the B-17 performance was not altogether justified, for Midway was not a test of the bomber. They noted that the AAF had played no part in planning the defense of Midway, nor had it retained operational control of the few planes actually sent up to the island outpost; they noted, too, that critiques of the battle had indicated a tendency to rush the attacks upon the carriers at long ranges without adequate planning for co-ordination, with the result that the torpedo squadrons had suffered disastrous losses. Even General Hale had no advance knowledge of the composition of the enemy surface forces his bombers would face.¹⁰²

One of the most serious handicaps was the lack of adequate servicing facilities or personnel on Midway, where the combat crews not only flew long, exhausting, daily missions but to a large extent were forced to do their own servicing and maintenance. Destruction of the powerhouse on Eastern Island by enemy bombing on 4 June further complicated this situation, completely disrupting the only available refueling system, thereby making it necessary for the tired crews to spend long hours servicing their planes from cans and drums, although in this task they were aided by Marine ground troops on the island.¹⁰³ A further factor was the rapid exhaustion of the crews of the combat planes in long 1,800-mile reconnaissance missions prior to combat; General Hale had protested in vain against the practice of sending out his B-17's against unknown targets, but he was overruled despite the fact that prior to the search mission of 1 June, his crews had not enjoyed seven hours' sleep in two days.¹⁰⁴

A complete assessment of their achievements is not possible, but certainly the above factors contributed to the sharp downward revision of claims necessitated by Japanese reports. It is probable that one hit was obtained in the initial attack of 3 June upon the transports; for

* It is of interest to note that immediately prior to the Battle of Midway, Maj. Gen. Robert C. Richardson reported from Hawaii that a force of no less than 90 to 100 heavy bombers would be necessary to assure the probability of 7 per cent hits on an enemy force of five carriers. He based this figure on earlier bombing experience which indicated that even from the relatively low altitudes of 12,000 to 14,000 feet, at least eighteen to twenty planes would be required to insure 7 per cent hits on a single maneuvering surface craft. (Report from Maj. Gen. Robert C. Richardson to Chief of Staff, 1 June 1942.)

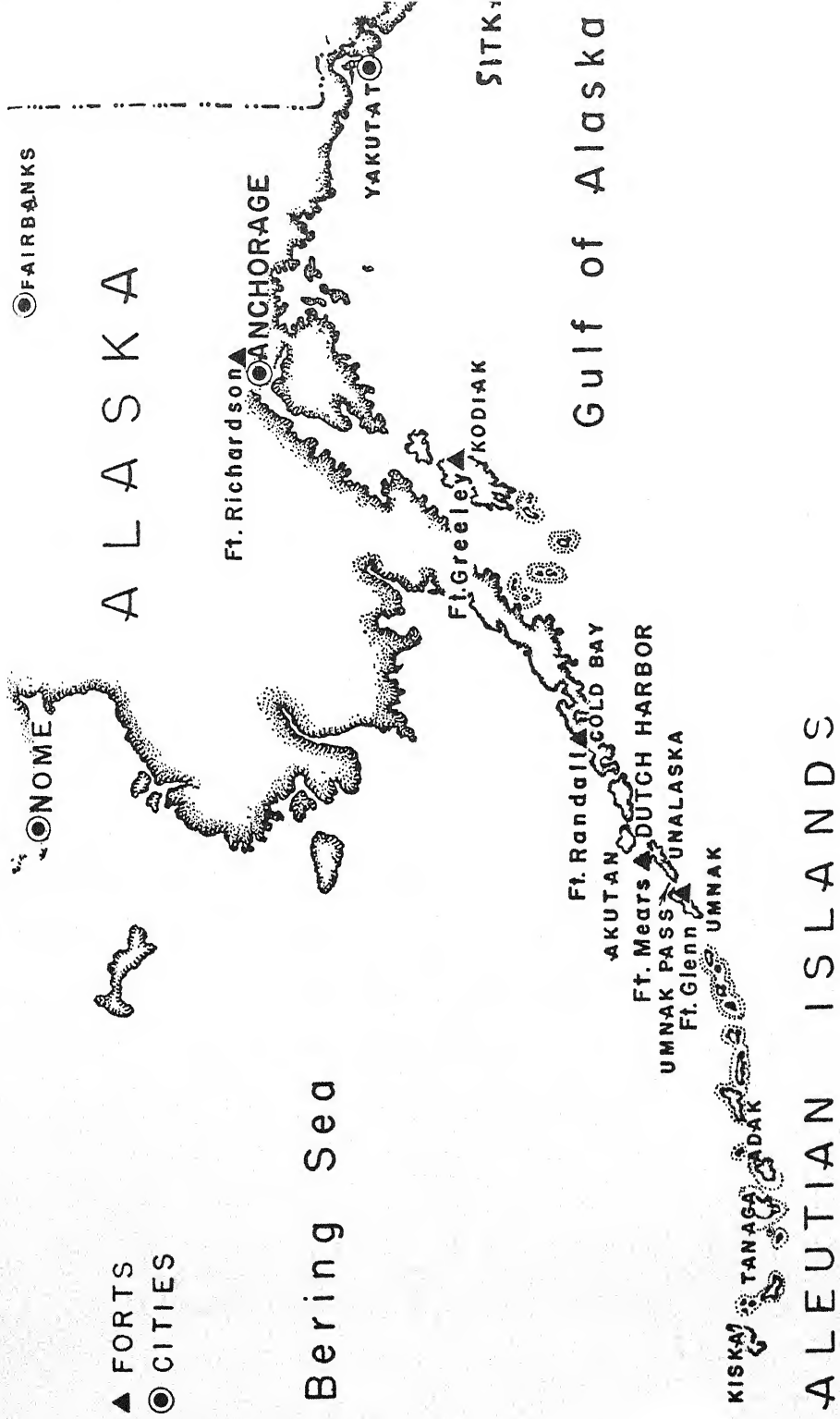
this there is some positive evidence. Reports reached the *Yamato* that a vessel was hurt, but thereafter the damage seems to have been inflicted almost exclusively by dive bombers. Certainly the enemy feared them most. During the engagement on the 4th, the battleship *Haruna* received some slight damage to her stern plates from a near miss and it is possible that this damage might have come from heavy bombers, but the survivors of that ship are positive that dive bombers hurt them.¹⁰⁵ On the afternoon of the same day, crews of the six bombers which attacked at 3,600 feet were positive that they scored a hit on a destroyer; enemy records indicate that one such vessel was damaged, but they fail to reveal the source of the bomb. Beyond this point it is not possible to go, and the claims must remain hidden in the fog of war. Vessels already afire when brought under attack by the B-17's did not easily lend themselves to accurate determination of direct bomb hits from observers 15,000 to 20,000 feet in the air. However, even though the heavies had not scored many direct hits, Japanese officers asserted that the B-17's had caused the enemy craft to break up their formations as they maneuvered radically to avoid the falling bombs, thereby decreasing their power of mutual support and leaving them more vulnerable to dive-bomber attack.¹⁰⁶ It is possible that a higher score might have been achieved had B-17 pilots and bombardiers approached the action in a less exhausted state and had they been permitted to train adequately in the months prior to Midway rather than devote most of their time to search, but the subsequent events of the Pacific war would indicate otherwise. Japanese ships at sea would not be sunk or hit with any degree of success until the attacking planes were brought down to minimum levels.

The impact of Midway upon the concept of Pacific air war held by the Navy and the AAF was considerable, setting off a train of debate which continued long after the sea battle had ended. In the light of the Japanese evidence and because of the very limited number of B-17's involved, there can be little question that AAF contribution was insufficient to check the enemy's advance. Torpedo planes of both services had suffered costly losses, and the dive bomber had won the day. But the AAF B-17 had proved itself superior to the PBV in fulfilling the vital requirement of continuous tracking. Both types could search the sea; yet once the contact was made, it was the B-17 rather than the PBV which could stand up to strong enemy air opposition and cling to the contact. Hence Admiral King placed a bid for suffi-

cient numbers of B-17's and B-24's for naval use in long-range search and tracking.¹⁰⁷ Furthermore, he restated his inability to accept the concept of a mobile air force for the mid-Pacific area. Most points were too weakly held and lacked service facilities; distances over water between the landing fields were too great to permit rapid movement of fighter reinforcements where needed, and the logic was inexorable—"more and more" planes must be stationed on the advanced bases, including AAF fighters for Marine use, because at this stage of the war Admiral King had accepted the belief that his carrier planes would be inferior to the AAF land-based planes.¹⁰⁸ Fulfilment of the admiral's demands with regard to increasing the static defense of the Pacific obviously would have altered the existing schedule of commitments, for AAF doctrine maintained that aircraft never would be produced in quantity sufficient to permit such a static defense. Thus the debate continued. AAF planners clung firmly to their belief that proper observance of economy of force would never permit the scattering of substantial air forces over the Pacific isles to serve as fixed defenses; furthermore, they pointed to the fact that more planes in Oahu would not have helped Midway, which already was saturated and could not absorb all the planes then available.¹⁰⁹ As for drawing upon their inadequate store of heavy bombers to supply the Navy, they asserted instead that since search and tracking were admittedly functions best performed by the land-based planes, these should pass to the control of the AAF.¹¹⁰ However, because any increment to the Pacific would cut directly into commitments for the European theater, it would be impossible to increase the flow of heavy bombers to the Pacific. If the vulnerable PBY's were shot down while executing their search mission, this was a loss which could not be avoided, and in any case it would result in a lower attrition rate than that arising from normal bomber and fighter operations over reasonably defended areas.¹¹¹ One of Midway's legacies was an enduring debate.

Attack Upon the Aleutians

When Admiral Nimitz first learned of the projected attack upon Midway, he knew that he might expect an offensive thrust against the Aleutians. The enemy apparently had considered at least Kiska, Attu, and Adak as possible outposts at the beginning of the war, but the details had not been worked out until the Midway campaign was planned.¹¹² Adak was also regarded as a northern base for patrol



planes, useful in covering the northern approaches across the Pacific to Japan, although some time before the Midway action the plan had been altered to eliminate Adak.¹¹³ Along with a small occupation force aboard two transports, the Japanese prepared a task force built around the two small carriers *Junyo* and *Ryujo*, which with two heavy cruisers and three destroyers would attack shipping, planes, and shore installations at Dutch Harbor. There was no intention of invading the Alaskan mainland, or even Dutch Harbor; the objective was to create a diversion for Midway, then fall back to support the occupation of the western Aleutians.¹¹⁴ On 30 May the task force sortied from Ominato in North Honshu; its attack upon Dutch Harbor was scheduled for 3 June, one day earlier than the date set for Midway.

Meanwhile Admiral Nimitz, having dispatched all available surface craft northward from Pearl Harbor, on 21 May placed all Army, Navy, and Canadian forces in the Alaskan theater under Rear Adm. Robert A. Theobald, as commander of Task Force 8.¹¹⁵ In the Alaskan theater, work proceeded at a feverish pace far out on Umnak Island, where the secret base was under construction. All available men were put to work constructing hardstands along the steel mat and by the 23d of May twenty-five of them were ready although they were unfloored. The work was exceedingly difficult. During the sunny days of spring, progress had been excellent, but by June the rains had come, followed by blizzards, and the construction work bogged down in deep mud.¹¹⁶ By the end of March, a 3,000 x 100-foot strip was usable at Umnak, but it was far from satisfactory. Even in June, when it had reached 5,000 feet, it was unstable, it tossed fighters thirty feet into the air upon impact, and waves in it made its use by B-26's exceedingly risky. Yet it did permit fighters to operate.¹¹⁷

From early April, the garrisons in Alaska had been alerted to expect attack at any moment upon one of the naval operating bases at Kodiak, Sitka, and Dutch Harbor, and Generals Butler and Buckner had pressed hard for reinforcements as they moved what planes could be spared out to Fort Greeley on Kodiak, Cold Bay on Alaska Peninsula, and Fort Glenn on Umnak, at the expense of some of the fields in the rear area.¹¹⁸ On 26 May, a flight of ten B-26's of the 77th Bombardment Squadron moved to Cold Bay. By 1 June a naval squadron of twelve F-4F's was en route to Kodiak; the Canadian Western Air Command had dispatched one squadron of bomber reconnaissance Bolingbromes to Yakutat, in addition to fifteen P-40's to Fort Richardson; twenty-

five P-38's were due in at Elmendorf Field at Anchorage; and a P-39 fighter squadron was en route to Alaska, destined for Kodiak. Seven new B-17E's were coming in for the 36th Bombardment Squadron (H), and upon their arrival the squadron strength would number eleven bombers, including one at Ladd Field, Fairbanks. However, four of these (three radar-equipped) were assigned to the Air Search Group with the PBY-5A's of Patwing 4. One-half squadron of B-26's (six planes) was ordered out to dismal Umnak, and one-half to Cold Bay.¹¹⁹ Already, on 23 May, ten P-40's of the 11th Fighter Squadron had landed on the spongy runway on Umnak, and, when reinforcements followed, on this westernmost field there were by 3 June twelve P-40's, six B-26's of the 77th Squadron, six PBY's, and two B-18's, with half the 77th and 11th squadrons back at Cold Bay (Fort Randall).¹²⁰ Here, too, came the six B-17E's and one LB-30 of the 36th Squadron, ordered out from Kodiak to Cold Bay on 2 June, where they arrived on 4 June.¹²¹ These were the dispositions and the Jap did not know them—he was completely unaware of the field on Umnak.

Out along the Aleutians the weather had turned bad; beginning on 29 May and for a week thereafter it was practically prohibitive for flying. Ceilings ranged from zero to 500 feet with visibility seldom exceeding five miles, and there was almost continual rain and fog. To reach this area, a B-17E of the 36th Bombardment Squadron was ordered to Umnak to conduct a daily reconnaissance of the Aleutian chain. The pilot, Capt. Russell A. Cone, reported that the mat laid on the porous volcanic soil gave the effect of landing on an inner-spring mattress. Heavy planes took off with difficulty from the springy strip, but on 28 May the B-17 ran its first search mission, covering the area between Umnak and Tanaga, the first island west of Adak. The crew sighted nothing, although the plane covered every inlet and bay along the island chain.¹²² At Umnak, conditions were extremely primitive. Bomber revetments and hardstands had been built, but they had not been floored and in wet weather the heavy plane would have mired in; the B-17 stood in the only available parking space, leaving the fighters ranged along the shoulders of the runway.¹²³

Combat crews set up their own tents and until 5 June cooked their own meals. Their bivouac area was a sea of mud; water covered the ground inside many of their tents and all crews were on alert from dawn to dark, which at that time of the year extended from 0400 to 2300.¹²⁴ They went with little or no sleep for 48-hour periods, and

they performed much of their own maintenance, pumping the gas from barrels and pouring oil from five-gallon cans. Crews which had previously never loaded torpedoes now for the first time fitted these weapons into the B-26's under naval supervision, and pilots took off over strips which left them only a four-inch clearance between torpedo and mat.¹²⁵ Fortunately, many of the twenty-three PBY search planes possessed radar, which proved of inestimable value in the fog and mist which prevailed.

Far off to the southwest in the direction of the Kurils, a weather front was moving up concealing under its fog and clouds the enemy's Second Air Fleet on the *Junyo* and *Ryujo*, supported by the heavy cruisers *Takao* and *Maya*, an oiler, and three destroyers. Already the enemy had conducted his own reconnaissance, sending up a plane from a submarine to scout Seattle harbor, while another plane checked on Dutch Harbor from a submarine lying 100 miles north of the island.¹²⁶ They saw nothing to alter the master plan, and the task force proceeded. But on 2 June while the ships were refueling, a PBY plane picked up the two carriers, reporting them at a point some 400 miles south of Kiska, and all available striking planes immediately were ordered forward to Forts Glenn and Randall.¹²⁷ The American plane had been spotted, fighters were sent in pursuit, and the PBY was driven off, thus losing the contact in the fog.

On the morning of 3 June, Rear Adm. Kakajugi Kakuda, fated to die on Tinian two years later, had his force 180 miles south of Dutch Harbor in a position to strike. Despite unfavorable weather conditions, bombers and fighters took off and at 0545 several fighters swept over Fort Mears and the naval installations at Dutch Harbor, causing very little damage in their single strafing run. Ten minutes later the first of four waves of bombers, of three or four each, attacked the area, this time destroying barracks and killing approximately twenty-five men.¹²⁸ Out on Umnak Island, all the P-40's had been sent aloft on patrol but they could not make contact with the enemy striking force. However, the two Japanese cruisers had catapulted four seaplanes to search the islands west of Fort Randall, and two of these blundered into the Umnak area unaware of the P-40's or of the existence of the Umnak strip.¹²⁹ Lt. John B. Murphy, on patrol with the 11th Squadron's P-40's, saw them, pulled out of formation with Lt. Jacob W. Dixon, and these two pilots immediately shot one plane down into the Umnak Pass at the end of the runway as the other fled in damaged

condition, apparently still ignorant of the existence of the Umnak strip. Thus far, the Jap had enjoyed considerable success. One float plane was gone, another crashed near its cruiser, and one of the *Ryujo's* fighters had made a forced landing on Akutan Island, but on the credit side damage had been inflicted on Fort Mears. The task force had steamed to a point only 100 miles from Dutch Harbor; now after recovering its planes on the afternoon of the 3d, it retired to await better weather for its scheduled air attack upon Atka and Adak.¹³⁰

The morning of 4 June was rainy, with a low overcast limiting visibility. Search operations were difficult, but so were carrier operations and Admiral Kakuda spent the early part of the day in awaiting a break in the weather before launching a fresh attack. Finally, planes for the second day's assault were sent off in weather so poor that only the best pilots on the two carriers were permitted to participate. Only one wave was launched, consisting of a total of fifteen fighters and eleven bombers from both carriers and six torpedo planes from the *Ryujo*.¹³¹ At 1800, ten of the fighters swept over the naval air station at Dutch Harbor in a strafing attack, followed by eleven dive bombers whose bombs inflicted considerable damage upon fuel installations and upon the *Northwestern*, a station ship then in use as barracks. At 1821, three more bombers attacked, but without achieving success; and at 1825, five more were overhead, killing four naval personnel as their bombs struck an AA emplacement.¹³² This time the enemy did not fare so well in his retirement. The *Junyo's* striking group, which had not learned of the Umnak strip, had selected as its rally point the west end of Unalaska Island, and there four dive bombers and four fighters were met by eight P-40's of the 11th Squadron's forward echelon. The action occurred directly over Umnak, and the enemy's lack of advance information on that island's installations cost him no less than 50 per cent of this force. Two enemy dive bombers and two fighters went down, destroyed by Lieutenants Chancellor, Dale, White, and J.J. Cape. Unfortunately Cape, for whom Cape Army Air Field was named, fell before a Zeke, while one other P-40 crashed on the island, but its pilot, Lt. Winfield E. McIntyre, walked unaided into camp.¹³³ One more *Junyo* bomber failed to reach home apparently because of failure of its radio receiver, which had been knocked out in the action at Umnak, but the *Ryujo* recovered all her planes.

While Japanese planes headed for Dutch Harbor, PBV's, B-17's, and

B-26's groped in the fog and mist for the carriers. At 0845 on the 4th, a PBV of Patwing 4, piloted by Lt. Marshall C. Freerks, USNR, had reported contact with three enemy vessels, including one or two carriers, at a point approximately 160 miles southwest of Umnak, and in response to this report, six B-17's and one LB-30 took off from Kodiak, headed for Cold Bay, where they would refuel and carry on the search.¹³⁴ At the same time, the B-26's of the 73d Bombardment Squadron (M), which were awaiting orders at Elmendorf, were directed to move out to Forts Randall and Glenn, and the 77th's B-26's were on the two forward fields ready to attack when ordered. Already, on the 3d, Captain Meals had taken off twice from Fort Glenn with a flight of B-26's but had seen nothing, and one B-26 had crashed on landing at Umnak when its landing gear collapsed, sending the torpedo tumbling end over end down the runway.¹³⁵

On the 4th, the B-26's were out again, in response to Lieutenant Freerks' report which reached Umnak at 0900. From Umnak, Captain Meals' flight of five B-26's ran into an area of low ceiling and fog, which forced the planes to return at 1355 without locating the target; but from Cold Bay, another flight of five B-26's was out to search, this one under Col. William O. Eareckson. Again the flight missed the target, except for the plane piloted by Capt. George W. Thornbrough, who had lost the main formation. Captain Thornbrough found the enemy force, made his run on the *Ryujo*, and dropped his torpedo so close that it fell over on the far side of the vessel where it failed to explode.¹³⁶ Thornbrough was keenly disappointed, and though he had been ordered to await the other planes at Umnak, he flew back to Cold Bay where he rearmed, this time with 500-lb. AP bombs, refueled, and returned to the attack. Some time later he was heard over Cold Bay, where he was "on top" but despite every effort could not be guided in. Several weeks later, his smashed plane was found east of Fort Randall.¹³⁷ It was not easy to find the enemy's ships in the fog and clouds. On the afternoon of the 4th, Captain Dunlop of the 36th Squadron led out a flight of five B-17's and one LB-30 from Cold Bay on a flight which lasted from 1545 to 2145, but the aircrews saw nothing. Lt. Thomas F. Mansfield, taking off later, was joined by Capt. Jack L. Marks, and these two located the enemy task force. Marks pulled up into the overcast to drop five bombs blindly, while Mansfield went down to minimum altitude and headed for a cruiser. This

was the *Takao*, whose gunners shot down Mansfield's B-17; only one survivor of the aircrew was recovered by the Japanese.¹³⁸

The final attempt to attack the task force came when Captain Marks informed the B-26's on Umnak of the target's precise location. Five B-26's took off at 2040 led by Captain Meals, and three aircraft located the carriers. Two torpedoes were launched, and it was believed at the time they had scored at least one hit on a cruiser. Actually they failed to hit, and the carrier escaped as well.¹³⁹ So ended the Dutch Harbor episode. For the U.S. forces on Unalaska Island, it represented a loss of 22,000 barrels of Diesel oil, some destruction from fire, forty-three dead at Dutch Harbor (thirty-three of them Army personnel), and about fifty wounded.¹⁴⁰ For the AAF, it meant the loss of two P-40's in action, one B-17 down in combat, one B-26 lost, one damaged by antiaircraft fire, one wrecked in landing, one LB-30 wrecked at Kodiak on its return from Elmendorf. Perhaps the most critical loss was that of radar equipment, for which spare parts were not available except at the cost of sets scheduled for delivery to the South Pacific bases.¹⁴¹ The Navy's patrolling PBV-5A's had suffered very severe losses to the Zekes, so severe that on 4 June, after forty hours of almost continuous operations in wretched weather, pilots and crews were at the limit of their endurance and only fourteen planes remained operative.¹⁴²

On the side of the enemy, it is probable that he achieved about all he had hoped for; losses were light, no damage had been incurred in any of the attacks, and the way was open for landing on the outer Aleutians. After recovering all surviving planes, the task force retired to a point about 600 miles south of Kiska where it was joined by the carrier *Zuiho* plus the *Kongo* and the *Haruna*, which had come up from Midway, and together these forces cruised south of Kiska for ten days to screen the landing forces.¹⁴³ These, including a special naval landing force of 550 men and 700 labor troops, had gone ashore on Kiska on 6 June, but only after some debate on the part of Admiral Yamamoto, who had seen his carriers destroyed at Midway on the 4th. Well aware of the significance of the grievous losses at Midway, apparently he had canceled the entire Aleutian landing operation, then yielded to his staff, which persuaded him to return to the original plan, with the result that the Kiska landing proceeded without further opposition, followed by additional landings on Attu on 7 June.¹⁴⁴

If the Japanese had achieved their objective in the Aleutians, they had fallen far short at Midway, where the outcome of the battle cut deeply into the war potential of the enemy. The air-sea engagement had been critical and disastrous; its immediate magnitude was concealed from all but a small handful of individuals in the imperial general staff and in the two service ministries, while its ultimate effect could only become apparent as the war progressed.¹⁴⁵ Midway had levied against the Japanese naval establishment a series of deficits whose cumulative effect was to become increasingly painful as the Japanese faced heavier commitments in the Solomons and New Guinea, and which lay beyond the nation's capacity to overcome. Four of the most efficient carriers had gone down, carrying with them the hopes of Admiral Yamamoto to bring about a major fleet engagement at a maximum distance from home waters; henceforth, the fleet would not roam the western and central Pacific with relative impunity. Its future operations would be more difficult, and they would be primarily defensive.¹⁴⁶ Furthermore, Midway had forced the Japanese to recognize that the center of gravity now lay in the carrier divisions, despite the resistance of older officers who clung to the traditional battleship as the major weapon.¹⁴⁷ But even more important was the loss of pilots, for the Midway forces had carried the most highly skilled flying and technical personnel in the Japanese navy. Now many of them were gone; perhaps 30 per cent of the pilots had been lost with the estimated 250 planes destroyed, and almost half the survivors were sent to staff a fresh Third Fleet. Before their scheduled two-month training could be completed, Guadalcanal had been invaded and it was necessary to commit them to Rabaul, where they were consumed in the running sore of the Solomons. Yamamoto now had his perimeter anchored in the Aleutians, but the attempt to fix its eastern terminus at Midway had dealt his naval air forces a keen blow; until the carrier groups were restored, his navy would be confined to the range of shore-based planes moving from island to island across the Pacific.¹⁴⁸

*THE PROBLEM OF
NEW GUINEA*

THOUGH apprehension for the security of Australia had been considerably relieved by Japan's withdrawal after the Coral Sea engagement, and though the offensive strength of the Japanese fleet had been seriously crippled at Midway, enemy forces still posed a serious threat to the Allied position in Australia and especially to the line of communications which joined it to the United States. Even in the absence of carrier strength, it would be possible for the enemy to move from Rabaul down the Solomons under cover of land-based aviation and thus to challenge the Allies for possession of New Hebrides, New Caledonia, and the Fijis. Already, in early May, he had occupied Tulagi on Florida Island, seat of the British Resident Commissioner of the Solomons; and early in June, Japanese troops moved across from Tulagi to the Lunga Plain of Guadalcanal, where they would begin construction of an airfield destined to fame in American military annals as Henderson Field. At the same time, he held Lae and Salamaua on the Huon Gulf, and from there it was a relatively short jump to points on the Papuan coast, whence, as events would soon prove, he might even attempt the seizure of Port Moresby by a land attack. The Japanese navy had sustained its initial defeats, but the army as yet had suffered no reverse. Moreover, the successful termination in May of the Japanese invasions of Burma and the Philippines obviously would release additional forces for the enemy's use. It was evident that some limited offensive action by the Allies would be required in order to make secure the defenses of the South and Southwest Pacific.

There could be no disagreement on the necessity for such action, but in the discussion of measures to be taken there naturally developed

a variety of conflicting views. The claims of the Pacific war as against those of the European war inevitably were involved, and tended to find expression in differing views of the Navy and the Army. To the latter, it was of vital importance to avoid commitments extending beyond actual requirements for the defensive strategy agreed upon for the Pacific, a view wholeheartedly shared by leaders of the Army Air Forces, who looked forward to the mounting of an early air offensive against Germany. General MacArthur's position as the responsible commander of the Southwest Pacific led him to form opinions that were held in common with similarly responsible naval commanders who faced the Japanese across the broad reaches of the Pacific Ocean,¹ but the division of command between the Army and Navy in the Pacific naturally made for differences of viewpoint. A final settlement of all of the issues involved could not be reached at this time, but a working agreement on immediate action was achieved, an agreement, moreover, which left the way clear for an early offensive against Germany.

Plans for Limited Offensive Action

General MacArthur now had in his command two American infantry divisions, the 32d and the 41st, which together with the veteran Australian 7th Division provided the nucleus of a ground army, though there were serious deficiencies of training and equipment. At the same time, he keenly felt the need for additional naval forces, including two carriers, and of another infantry division especially trained for amphibious assault; for he proposed to undertake a northward thrust from Australia by way of New Guinea against the enemy at Rabaul.² His ideas were not without support in Washington, where, for example, the Assistant Chief of Air Staff, Plans, Col. Orvil A. Anderson, had in preparation a study of the possibility of a conquest of Rabaul through operations based upon the principle of a progressive achievement of air superiority over intervening land bases. A considerable development of air facilities in northeastern Australia and around Port Moresby, together with control of the air in those areas, initially would be required. Then, with "complete air supremacy" established over the approaches to New Britain, it would be possible to seize Lae, Salamaua, and Gasmata by an airborne task force, and thus to move forward Allied fighters and dive bombers in preparation for an amphibious assault on Rabaul with the co-operation

of both land-based and carrier-borne planes.³ It was an ambitious proposal, indeed too ambitious for the means then at hand, but it indicated a line of thought in the War Department that on broad principle would be favorable to General MacArthur's immediate proposal and to the development of tactics he would subsequently follow in the Southwest Pacific.

But the Navy, apparently concerned over the prospect of committing its forces between New Guinea and the Solomons while the enemy held the latter, objected to MacArthur's proposal that the New Britain area should be an immediate objective. It had proposed, rather, an initial conquest of Tulagi by South Pacific forces supported by those of the Southwest Pacific.⁴ The introduction of this alternative into the discussion posed, among other difficulties, a knotty problem of command; for Tulagi under the original directive to MacArthur fell within the Southwest Pacific, and it was evident that the Navy anticipated that, even so, it might control an operation to be mounted in the South Pacific against the Solomons. Such a command arrangement, in fact, had become formally a part of the Navy plan by 29 June, when Admiral King submitted to the Joint Chiefs a proposal that Vice Adm. Robert L. Ghormley, who had been in command of the South Pacific since 19 June, should be given command of an operation for seizure of Santa Cruz and Tulagi on the understanding that General MacArthur would assume control of its subsequent development into an attack on the Japanese position in New Guinea and New Britain.⁵

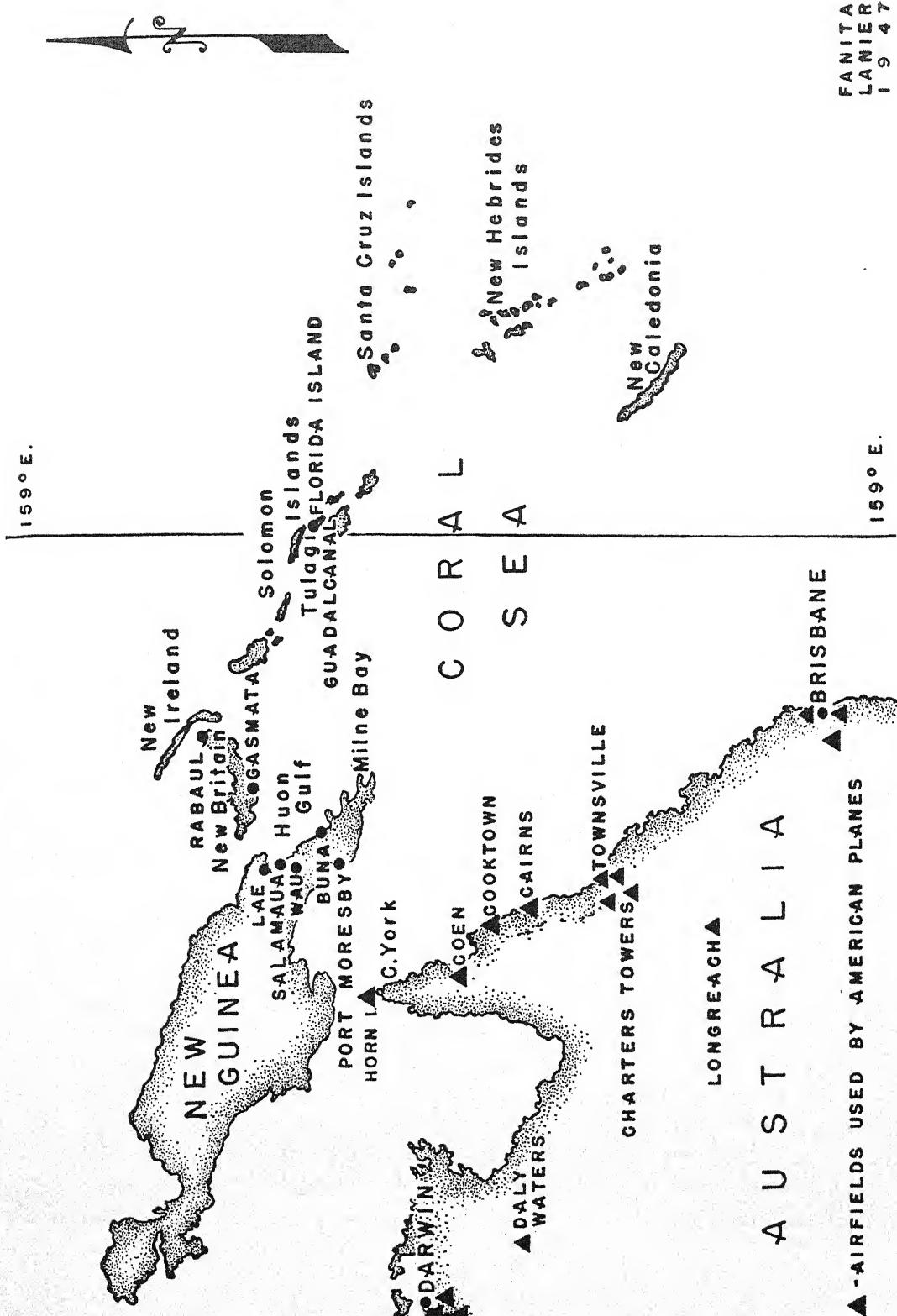
Though MacArthur had protested that his own plan for direct action against Rabaul presupposed the establishment of an air supremacy that would remove the grounds of the Navy's objection, and though he warned against the dangers of divided command, Admiral King's proposal offered the basis of a workable compromise.⁶ Accordingly, on 2 July the Joint Chiefs issued a directive which defined their policy with reference to the Japanese threat in terms of three tasks.⁷ Task one, the occupation of Santa Cruz and Tulagi, would be executed under the command of Admiral Ghormley with such support from air and naval units of the Southwest Pacific as could be rendered. To remove jurisdictional uncertainties which might hamper the effort, the boundary between the South and Southwest Pacific theaters would be moved westward as of 1 August to the 159th meridian, a line that would place within the South Pacific all

of the lower Solomons. Task two, under command of General MacArthur, would involve seizure of the upper Solomons and of Lae, Salamaua, and the northeast coast of New Guinea. The way then would be prepared for task three, which was the seizure, again under MacArthur's command, of Rabaul and adjacent parts of New Britain and New Ireland. Control over the composition of forces, the timing of each task, and the "passage of command" would remain with the Joint Chiefs.⁸

Thus did the American chiefs of staff set the stage for the bitter drama to be enacted on Guadalcanal, where the Marines would land on 7 August. If the Army had yielded to the Navy's persuasion regarding strategy in the Pacific, its own strategic concept of the war as a whole remained official policy. General MacArthur had been forced to surrender the hope of attack in strength on the enemy to the north, but that enemy nevertheless would be heavily engaged over the ensuing months. Meanwhile, the Southwest Pacific command would be free with available forces to undertake appropriate steps preliminary to the inauguration of operations in fulfillment of task two.

The Operational Record of May and June

Since one of the prerequisites to an undertaking of task two was the ability to assert control of the air over upper Australia and the lower extent of New Guinea, there was a good deal of reassurance to be found in the recent record of Allied air operations. The bombers were still forced to operate from bases well to the rear, and to stage through Port Moresby for attacks on Lae, Salamaua, and Rabaul. But Allied intelligence indicated an approximate balance between our own and enemy forces in the general area of combat. On 19 May the Japanese were credited with forty-five fighters and forty bombers in New Britain and New Guinea, and with a comparable number divided between Timor and Bali, as against an over-all total of 302 American fighters (operational and inoperational) at the end of May. The figures were substantially unchanged two months later, though 167 enemy planes credited to Celebes were obviously within easy reach of either Timor or Bali. On 18 July the Americans had in the combat area eighty P-40's of the 49th Group stationed at Darwin and eighty-three P-400's belonging to the 35th Group, two of whose squadrons were based at Port Moresby.⁹ The enemy still enjoyed



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obvious advantages in the reinforcement of his outlying bases, but even leaving out of account the limited strength of the RAAF, the Allies no longer faced overwhelming odds in the defense of their outposts.

The lack of adequate air warning facilities still proved a discouraging factor. RAAF radar equipment, having only a fifty- to seventy-five-mile range, was quite unsatisfactory, and five SCR-270's which had been emplaced in Australia were the only American sets available at the end of April. As a consequence, a considerable reliance had to be placed upon spotters in the hills and coast watchers—Australians, for the most part, who risked their lives in the remote areas of New Guinea, New Britain, and the Solomons to watch and send by radio a warning of enemy activity—who would render such distinguished service throughout the Solomon and New Guinea campaigns.¹⁰

Progress had been made in the development of tactical skills, which helped to overcome the disadvantages of inadequate warning and certain superior qualities of the enemy planes. The 49th Fighter Group in its defense of Darwin had compiled a very creditable record. Prior to May it had lost seven of its P-40's and three pilots while destroying an estimated total of 38 Japanese planes and 135 crewmen. The heaviest enemy attack had been executed by twenty-four bombers escorted by nine fighters, and this attack had been met by fifty P-40's whose pilots claimed eleven of the enemy aircraft. During May, Darwin, for a change, remained free of bombing. The enemy returned on four consecutive days in June, his largest mission comprising twenty-seven bombers and eighteen fighters which were intercepted by twenty-eight P-40's, and the final score for the month stood at nine P-40's against thirteen enemy losses.¹¹ Though the Japanese still could get through to Darwin, it was costly.

A substantial part of the credit must be assigned to the skill of ground crews and other service personnel. By dint of their energetic efforts Col. Paul B. Wurtsmith, commanding officer of the 49th Group, could usually count on having sixty P-40's in commission, with the result that his pilots were rarely outnumbered. Probably of greater significance were the conferences held after every engagement for the purpose of perfecting combat techniques that would overcome the inferior "speed, maneuverability, climb, and ceiling" of the P-40. As a result the two-plane element had been fixed upon as the chief reliance in combat, individual dogfighting had been out-

lawed, pilots had been instructed to attack only with an altitude advantage, and to repeat the attack only under the most favorable circumstances. As a result the inferior characteristics of the P-40 were minimized, while the pilot capitalized on its superiority in armament and diving.¹²

Lt. Col. Boyd Wagner, who had been appointed director of pursuit in the Moresby area, faced a still tougher assignment. Trained service units were lacking; engineering equipment and maintenance supplies were critically low; and the P-39, even in a good state of repair, was unable to meet the Japanese fighter on equal terms. The P-39's leakproof tank, rugged construction, and heavy firepower were popular characteristics, but the superior maneuverability, greater acceleration, and higher ceiling of the enemy's plane enabled him to avoid combat almost at will.¹³ Late in May the first flights of the 35th Group, equipped with P-400's, arrived to relieve the pilots of the 8th Group, who in June returned to Townsville to recover from dengue fever, malaria, and fatigue. During May alone Moresby had been attacked twenty-one times. Though some of these attacks were slight, one had been carried out by thirty-four bombers and fifteen fighters with considerable damage to the Seven-Mile Airdrome.¹⁴

That most of the enemy's raids on Port Moresby did little damage was hardly because of the intrinsic merits of the P-39 and P-400. The threat of interception and a gradual improvement in anti-aircraft defenses in the area tended to keep the enemy's bombers high; more than forty of his planes had been shot down; and during June and July the scale of his effort was reduced. The cost to the Americans, however, had been high. Prior to June, twenty to twenty-five P-39's had been lost in combat, eight more in forced landings, and three by destruction on the ground. The sources are contradictory, but fighter losses at Port Moresby seem to have declined somewhat during June and July.¹⁵

In addition to the defensive tasks assumed and a few offensive sweeps, the fighters at Port Moresby also provided escort for transport planes on flights to the primitive airfield of Wau in North East New Guinea. There a band of miners and prospectors, reinforced by a small but specially trained Australian commando-type unit and known as the Kanga Force, held out against a larger force of Japanese who had advanced inland from Lae and Salamaua. By way of a circuitous water and land route, the Kanga Force received supplies at

the rate of about three tons of cargo a week. Since this force represented the only ground unit, aside from guerrillas, actually engaged in fighting the enemy, it was decided to supplement its supplies and to provide reinforcements by air transport with a view toward launching an attack against Lae and Salamaua. This project was somewhat delayed by bad weather and inability to provide fighter cover, but on 22 May a flight by the 21st Troop Carrier Squadron inaugurated a movement of about 300 troops and supplies. For more than a year thereafter, the rough and sloping 3,300-foot runway at Wau served as the most advanced terminal of Southwest Pacific transport operations. At the close of June, the small force at Wau even undertook raids on the Japanese positions at Lae and Salamaua.¹⁶

Efforts to make Lae and Salamaua as untenable for enemy bombers as was Port Moresby for Allied bombers had been inaugurated by the A-24's of the 8th Squadron at the opening of April. But prior to their withdrawal at the end of May to Charters Towers, the A-24's flew only four combat missions, totaling twenty-nine sorties, from Port Moresby. Though only two were lost in combat as against claims of six enemy planes destroyed on the ground and two shot down, operational losses were high. On 4 April, of the forty-two dive bombers assigned to the Allied Air Forces, only twenty-two were in commission; two months later, only twelve out of twenty-six.¹⁷ Designed originally as a carrier-borne plane and seemingly unequal to the rough wear of imperfect fields, of relatively short range and slow speed, and highly vulnerable except when provided with better escort than was possible at Port Moresby, the A-24 was written off by AAF personnel as unsuited to the type of operations required in New Guinea, perhaps mistakenly in view of its subsequent record in Navy hands.

Not unnaturally, the AAF came to place greater confidence in the more rugged B-25. The early "C" model of the Mitchell Army bomber had approximately three times the range of an A-24, could carry more than twice its bomb load, had two more .50-cal. machine guns, and was faster. Ever popular with Army flyers and locally dubbed a "luxury liner," it proved well suited to the hazardous flights across the Owen Stanley Mountains. The only trouble was that there were not enough B-25's. Only fourteen originally had been available under the Dutch contract, and by August there were still only seventeen on hand.¹⁸

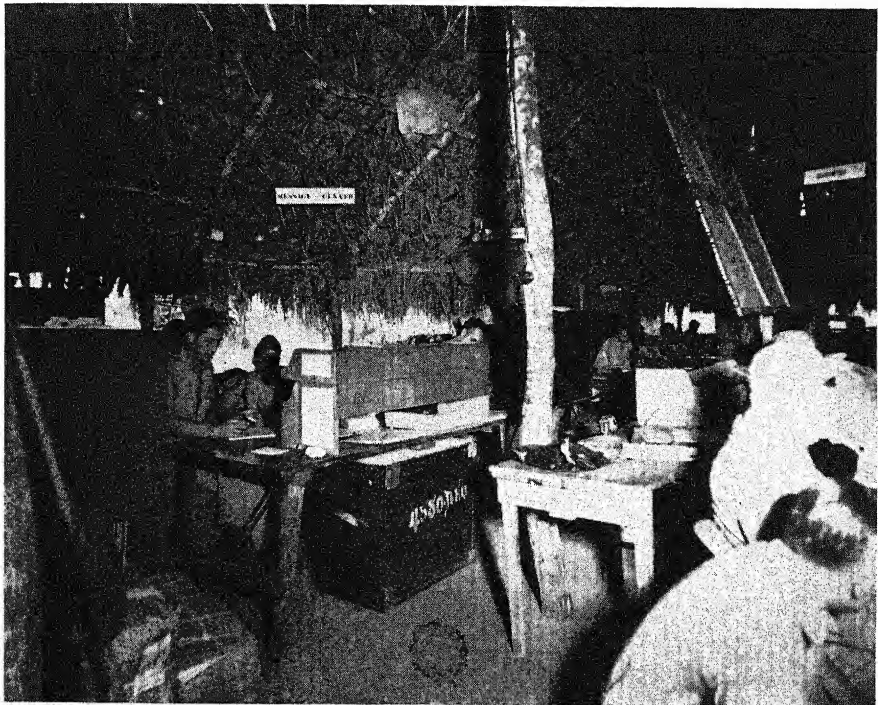
Between 24 April and 4 July, seventy B-25 sorties were flown against Lae and Salamaua, to which number there were added eighty-four B-26 sorties, forty-five by B-17's, and twenty by RAAF Catalinas, Beauforts, and Hudsons. Insofar as was possible, the bombing efforts of the several units were co-ordinated, as when, on 16 May, fourteen B-25's and four B-26's destroyed buildings, set fire to fuel dumps, and damaged grounded aircraft at Lae. On 9 June, five B-25's, eleven B-26's, and two B-17's bombed the same target through an overcast; and on 16 June, nine B-25's, ten B-26's, and three B-17's scored hits on runways and buildings. It was difficult to ascertain the damage done. The weather was frequently unfavorable, and the Japanese skillful at camouflage. Photographic reconnaissance indicated that bombs often fell wide of the target, and the enemy continued to add new taxiways and dispersal areas. But the Japanese never at any time based their bombers in appreciable numbers at either Lae or Salamaua, and that was what counted. Indeed, Allied estimates, based in part on information supplied by an RAAF officer who spent months within sighting distance of Lae, indicated that enemy fighters based on New Guinea rarely numbered more than forty.¹⁹ These were enough, however, to maintain a stubborn defense. Between 24 April and 4 July, three B-26's and eleven B-25's were lost in combat. Especially heavy were the losses to an interception of 24 May. Eight B-25's of the 13th Squadron led by its commander, Capt. Herman F. Lowery, and flying as usual without escort, cut through a pass in the mountains, swept wide of Salamaua, and turned in toward Lae from the east to be met head-on by a strong force of enemy fighters. Six or seven of them were shot down, but Captain Lowery's plane burst into flames and dove into the ocean, and one by one four other B-25's went down. A sixth bomber crash-landed on its return to Moresby.²⁰ As with the heavy bombers, Moresby served the mediums only as a staging point.

More of the B-26's would have been available for strikes at Lae and Salamaua had it not been for the fact that during April and May the 22d Group assumed a major responsibility for the run to Rabaul. This, of course, was a job for the heavies, but on 2 April the 19th Group had but six aircraft in commission, and through May and June would average no more than seventeen B-17's ready for combat, or less than half its assigned strength. Moreover, one of its four squadrons, the 435th, was reserved for reconnaissance duties, and repeatedly

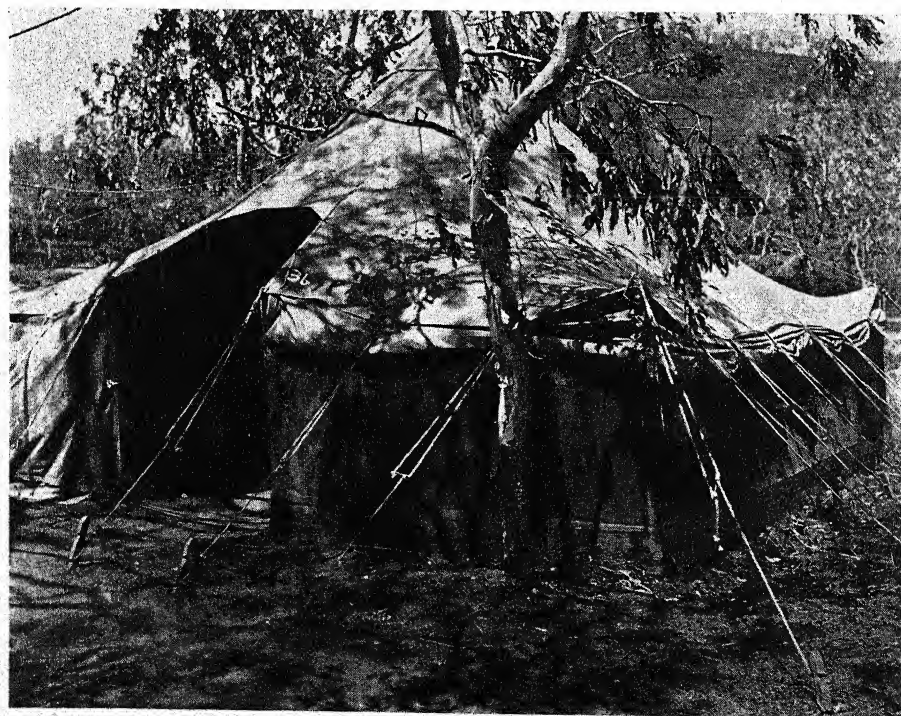
flew two missions a day for this purpose over New Guinea and New Britain and on occasion to the Solomons and the Netherlands East Indies. Indeed, reconnaissance flights continued to levy heavily upon the bombers of all classes available for offensive operations; even the 3d Group's B-25's flew better than 120 reconnaissance sorties in the month of May, when the presence of the enemy's fleet in the Coral Sea created a special demand for this type of service.²¹ The B-26's were based in the Townsville area, and for the mission to Rabaul each plane was fitted with a 250-gallon bomb bay tank and took on a bomb load usually of 4 x 500-lb. bombs or 20 x 100-lb. bombs prior to the 600-mile flight to Port Moresby. Having arrived there, preferably about dusk, an advance detachment of the group readied the planes for the next day's mission under cover of darkness. They would take off in the early morning, unless the start was delayed for the purpose of confusing the enemy's defense, and normally would follow a route that took them for forty or fifty miles along the New Guinea coast, then across the Owen Stanley range at approximately 7,000 feet, and through equatorial weather which frequently proved as dangerous as enemy fighters. Over Rabaul, the Marauders made their runs at something under 10,000 feet, after which they turned for the 1,300-mile flight, broken again at Moresby, to their bases.²²

Between 6 April and 24 May, the 22d Group completed sixteen missions for a total of more than eighty sorties against Rabaul. Hits were claimed on three transports, two merchant vessels, and one aircraft carrier in addition to the destruction of at least sixteen aircraft on the ground and ten in the air. The targets provided by the Lakunai and Vunakanau airfields and the near-by harbor were vital ones, but the distances were actually too great for the B-26. The last mission was flown on 24 May—indeed it would be October 1943 before Rabaul was attacked again by medium bombers—and the job was turned over entirely to the heavies. During April, May, and June the 19th Group itself mounted eighteen missions against Rabaul for a total of approximately sixty sorties. Though unfavorable weather and darkness often prevented anything like an accurate assessment of results, gratifying fires and damage to at least two vessels were reported.²³ Bombing missions to Rabaul, as to other points, also served in a highly important way the ends of reconnaissance.

Through these months there had been few antishipping strikes, except during the Coral Sea action of May and against vessels lying



HEADQUARTERS, 35TH FIGHTER GROUP, PORT MORESBY, 1942



HEADQUARTERS, 35TH FIGHTER GROUP, PORT MORESBY, 1942

at Lae, Salamaua, and Rabaul. Presumably, the best-equipped plane at the disposal of the Allied Air Forces for this purpose was the A-24, but its range did not carry to the main routes of enemy shipping at this time. The B-17 had the range, but the normal priority assigned to counterair operations and the special priority given to reconnaissance left few planes for the purpose. Moreover, pilots trained in high-level bombardment showed no inclination to experiment with low-level attacks. In anticipation of an expected need, a detachment of the 22d Group went through some training with especially equipped B-26's in torpedo-dropping, but they never would be put into combat.²⁴

All told, the record was spotty, but there was much to support General Arnold's contention during the summer and fall that, given a complete build-up of the assigned forces, the Pacific commands possessed enough air strength to hold the Japanese.²⁵ Certainly, the Allied Air Forces was holding its own; at no time since April had the Japanese enjoyed numerical superiority, and this despite departure of some AAF units to strengthen the South Pacific. From April to mid-July, American units lost in combat sixty-one fighters and twenty-two bombers, an additional ten bombers and one fighter on the ground to enemy action, and the depressing total of fifty-four fighters and twenty-three bombers to accidents. During the same period, claims were made for more than eighty Japanese planes shot down; others were destroyed on the ground, and there is reason to believe that unrecorded planes were lost as a result of combat damage on the way back to their bases. It also seems to be a reasonable assumption that operational losses were high.²⁶ A discouraging factor to American airmen in the Southwest Pacific was the delay in the arrival of reinforcements and replacements. Here the enemy, with interior lines of communications, presumably had the advantage. The arrival of American fighters and short-range bombers depended on the critical item of shipping, and even the bombers arriving by the ferry route came in more slowly than had been expected. There was cause for foreboding in figures which showed that during May and June 106 fighters and 42 bombers had been lost, while gains listed no fighters and only sixty-two bombers.²⁷ But American production was now reaching a point that soon would permit it to provide the remedy.

Another cause for concern was the unsatisfactory state of morale.

Virtually all operations were flown from areas that were remote from the more thickly settled sections of Australia; living conditions were primitive, the food was chiefly an unfamiliar Australian ration, the incidence of dengue fever and malaria was high, and facilities for hospitalization and recreation were more than inadequate.²⁸ In these circumstances, the strain of unusually difficult operations took a higher toll. Personnel who had fought through the Philippine and Java campaigns suffered effects of fatigue that at times approached a defeatist attitude; even those who had flown their first combat mission in April had to fight a feeling of disillusionment. Long overwater flights, the dropping of a few bombs with unobserved results, the loss of friends to combat and accident, the lack of opportunity for leave and rotation, the slowness of promotion, and a rather confusing system of operational control, all added up to a trying experience that seemed to have little if anything to do with the outcome of the war. Personal relations with the Australians were generally excellent, for the two peoples had much in common, but the American flyer tended to resent the extent of RAAF control and to find in its administrative forms, as with any unfamiliar government form, a ready source of grievance.²⁹ With the inevitably limited perspective which modern war imposes upon the individual participant, dependent upon the leadership of officers who often were as yet young and inexperienced, and lacking the assistance of effectively organized informational services, he had trouble in assessing his own part with reference to the whole or even in recognizing that he and his immediate fellows were beginning to function like a team.

Responsible officers were alert to these and other needs, and some of them had occasion for satisfaction with the progress made.³⁰ Air Services still suffered because of an insufficient number of trained personnel and the necessity of resorting to cannibalizing aircraft in order to get spare parts, but through the agencies of the Australian government an increasingly effective liaison had been established between the Allied command and Australian industry. Some parts and very helpful maintenance facilities were now available from Australian sources. It was possible to provide a complete overhaul for all types of American engines. With local assistance in the provision of materials and tools, the supply and maintenance section of Air Services, under Col. Carl Connell, was pioneering in the design and development of a fifty-gallon steel interchangeable belly tank for

the P-40, P-39, and P-400, of special suspension gear for bomb shackles on the same planes, and of interchangeable bomb bay tanks for the B-26 and the A-20. Labor was more readily available, and gratifying progress marked vital construction in the advanced area.³¹ A beginning made on the improvement of airstrips in the north, together with the prospect for better maintenance, carried the promise of reduction in a hitherto appallingly high rate of accident.³²

Preparations were still incomplete, but the time had come for a move forward. On 20 July, General Headquarters moved from Melbourne, where it had been located since April, to Brisbane. Air service activities at Townsville were increasing. Additional fields were coming into use on Cape York and around Port Moresby; engineers had reached Milne Bay for the purpose of developing airstrips there, and orders had been issued to secure the area about Buna, farther north on the coast of New Guinea, for a still more advanced airfield that would strengthen the Allied Air Forces in its effort to restrict Japanese activity on the Huon Gulf, and at the same time would place the American planes in a better position to co-operate with our naval forces in the fulfilment of task one.³³ But before these orders could be executed, the enemy on 21 July landed at Buna in preparation for a push across the mountains against Port Moresby.

By the time the Marines went ashore on Guadalcanal to begin a fight for the Solomons, the forward movement in Australia had been accelerated to meet a new challenge for the possession of New Guinea. The two contests would be fought bitterly and simultaneously, and from them men would date the beginning of the collapse of the world's newest empire.

CHAPTER 14

* * * * *

COMMITMENTS TO CHINA

IT WILL be recalled that just at the close of Allied resistance in the Netherlands East Indies, General Brereton, under instructions from General Brett which were subsequently confirmed by the War Department, flew to India for the purpose of organizing an American air force in the India-Burma area. He had been preceded by Col. Francis M. Brady and was accompanied by a handful of AAF personnel who would form a nucleus for the new air force. Six heavy bombers were flown up from Java, and orders were issued for all planes and crews en route to the Netherlands East Indies by the African ferry to stop in India. Three vessels which had left Fremantle in Australia on 22 February, in company with the ill-fated *Langley* and *Sea Witch*, were on their way across the Indian Ocean with the ground echelon of two squadrons of the 7th Bombardment Group (H), the 51st Air Base Group, personnel of the 51st Pursuit Group, and ten P-40's.* At Patterson Field, Ohio, the Tenth Air Force had been activated on 12 February. It was assigned to the newly created China-Burma-India theater,¹ and General Brereton formally assumed command on 5 March. Such were the meager beginnings of an organization forced to operate at the end of a longer supply line than that of any other existing American air force, over distances within its theater that exceeded considerably those embraced by the bounds of the United States, and in an area possessed of few of the industrial facilities upon which air power is directly dependent.

It was the third extraordinarily difficult assignment which had fallen to the lot of General Brereton in the initial stages of the war with Japan. Formerly commander of the Far East Air Force in the Philip-

* See above, pp. 396-97.

pires and more recently of American air units operating in the Netherlands East Indies, he was now to command an air force based in India with a mission for the support of China. Key decisions would involve consideration of the interests, not always identical, of two major allies. Once again he had to improvise an organization in the face of a rapidly advancing enemy whose conquest of Burma, which held the key to any plan for the immediate assistance of China, would be completed before the Tenth could be given the means to fight. Lacking personnel, planes, and other equipment that make up an air force, Brereton would not even command the major American air unit operating within the theater. For ere the famed American Volunteer Group (AVG) had been inducted into the AAF in July, General Brereton was transferred, with such striking force as the Tenth possessed, to the Middle East.

The AVG

The exigency of war had determined the time and circumstances of General Brereton's arrival in India, but the decision to conduct aerial operations in support of China came as a logical culmination of a well-defined American policy extending back to the Japanese occupation of Manchuria in 1931. At that time the American people had been unprepared to go beyond a general indorsement of the policy of non-recognition for such conquests enunciated by Henry L. Stimson, Secretary of State, who was now serving as the Secretary of War. But we had watched with growing concern the progress of Japanese forces in China, and with increasing admiration the evident purpose of the Chinese to continue their resistance. This concern had become acute by 1941, when all approaches to China had been sealed off except for the Burma Road, a tortuous truck route hewed through the mountains between Lashio and Kunming in 1937-38.²

A quickened interest displayed in the Sino-Japanese conflict by the American government in 1941 reflected not merely a growing popular demand, in which the traditionally isolationist section of the press tended to join, but the government's own concern over the prospect of an early involvement in war with both Germany and Japan. If we were to fight both of them (and the two had entered recently into a formal alliance clearly directed against the United States), the most realistic of considerations argued for every possible effort to strengthen China, especially in view of strategic plans then taking

shape which called for a holding effort against Japan until the major foe in Europe had been defeated. In anticipation of the passage of the Lend-Lease Act of 11 March, Mr. Lauchlin Currie had gone to China as economic adviser to President Roosevelt for study of her needs.³ He was followed in the spring by Brig. Gen. Henry B. Clagett, who was sent from the Philippines as an Air Corps officer for the purpose of reporting both on Chinese requirements and on the potentialities of the area for air operations.⁴ China's requests for assistance under lend-lease aid emphasized the need of trucks to be employed on the Burma Road and of aircraft for the defense of her cities.⁵ Trucks and technical assistance in the operation of the Burma Road were readily provided, but there was a critical shortage of aircraft.⁶ At a time when our own expanding air arms easily could have absorbed the entire output of the American aircraft industry, there was a large backlog of British orders; and the problem was complicated further by the desire to send aid to Russia after the German attack in June. Nevertheless, August brought firm commitments to China for the provision of more than 300 training and combat aircraft, chiefly of models considered obsolescent for AAF and RAF needs, and cadres of American pilots and ground crews to render advisory assistance in the maintenance and employment of the planes. It had been agreed, moreover, that 500 Chinese fighter pilots, 25 bomber crews, and 25 armament and radio mechanics would be trained by the Americans, the first contingent to begin its training on 1 October.⁷ In that month an American military mission under Brig. Gen. John Magruder reached China to accomplish an over-all study of problems of supply and to provide necessary instruction in the use of American-made equipment.⁸ Thus, by the fall of 1941 the way had been prepared for a strengthening of China's resistance to Japanese aggression through the provision of materiel, training, and technical guidance.

Substantial quantities of material had been delivered or were under movement by that time, but certain features of the program, and notably those pertaining to a strengthening of the Chinese Air Force, required time for their development. And of time, by now, there was precious little; for the Burma Road, so crowded as to be subject to utter confusion, had been brought within the range of Japanese bombers. The prostrate Chinese Air Force for some time yet would be unequal to defense of the road, and to assign units of the American air force for the purpose was out of the question. But an answer to

the problem had been suggested by a retired Air Corps officer, Claire L. Chennault, who since 1937 had been serving as special adviser to the Chinese Air Force.

Known to Americans chiefly as a member of the "flying trapeze" team which over preceding years had electrified spectators at air shows and races by its demonstration of formation flying, Chennault was also a diligent student of fighter tactics.⁹ Having been retired from the Army in 1937 because of defective hearing, he promptly accepted the opportunity offered to him by the Chinese government to put some of his theories into practice under combat conditions. In China, he found the procurement of necessary equipment, even before the outbreak of war in Europe, an increasingly difficult problem for the Chinese Air Force. The Soviet Union had become after 1939 the main source of supply, a source cut off by her entry into war in June 1941. Recognizing a trend of events that ultimately would permit the Japanese to bomb Chinese targets at will, and convinced at the same time that the United States eventually would have to fight Japan, Chennault already had turned to the idea of recruiting for service in China an international air force that would include American planes manned by American pilots. The participation of German, Russian, and Italian airmen in the Spanish civil war offered a precedent for action against the Japanese; such action would provide, he believed, valuable experience for the Americans.¹⁰

Having secured the agreement of Generalissimo Chiang-Kai-shek, Chennault returned to the United States early in 1941 with Gen. P.T. Mow of the Chinese Air Force. To the latter's attempt to secure aid for a long-range program that would rebuild the Chinese Air Force, Chennault lent assistance, but he was more active in an effort to put across his idea of an international air force. In Washington he was aided by Chinese Foreign Minister T.V. Soong, and after preliminary discussions with the War, Navy, and State departments, Chennault presented the plan at the White House. There were, of course, arguments against the proposal, but the current trend of events argued strongly for it. The precedent in Spain might be dismissed as of doubtful validity, but to stand on the niceties of international law only to permit China to fall a complete victim of Japanese aggression was also a disturbing suggestion. The clinching argument was the inescapable necessity to provide aerial protection for the

Burma Road during the time needed for rehabilitation of the Chinese Air Force.

The way paved for an approach to the practical problems of recruitment, training, and equipment, it was decided to attempt in the first instance only the organization of a fighter group of American airmen. Subsequent experience more than demonstrated the wisdom of this decision in favor of a modest beginning. To Chennault, time was of the essence; only by recruiting well-trained pilots and ground crews would it be possible to put the group into operation with the speed required. For personnel of this qualification, no source existed outside the air arms of the Army and Navy, and there he found a natural reluctance to yield up experienced personnel at a time when rapid expansion in all arms and services created the most acute shortages. With the men themselves, caution seemed to outweigh the promise of adventure and attractive financial rewards until it was made clear that the venture was not without official sanction and that officers volunteering could be placed on inactive status without loss of seniority. The required 100 pilots finally were signed, together with about 200 ground-crew personnel, and by 1 July the first contingent of the American Volunteer Group was on the West Coast ready to depart. Contrary to expectation, it had proved easier to find the planes than to get the men. Current production of all late-model pursuits was insufficient to meet requirements of the American and British air forces which carried a higher priority; but 100 P-40B's (Tomahawks that were considered obsolescent by the AAF and RAF) previously allocated to Sweden were released for the purpose and reached Rangoon in time for the opening of training there in September.¹¹

To take care of some of the legal problems, the Central Aircraft Manufacturing Corporation, owned by Curtiss-Wright and the International Company of China, which operated aircraft manufacturing plants in China, acted as agents between the Volunteer Group and the Chinese government. The Volunteers signed a contract for one year with Central Aircraft to manufacture, service, and operate aircraft in China. Great Britain made available a training base at Toungoo in Burma, where final preparations for combat could be completed without danger of Japanese air attack.

Implementation of hastily devised plans presented its own special difficulties. No provision had been made for replacements, some res-

ignations occurred, and a lack of spare parts plagued early efforts. In November, Chennault reported that only 43 of the original 100 planes were serviceable and that only 84 pilots remained fit for combat duty.¹² Some of the most critically needed equipment was sent by air, but interested parties in the United States met with little success in an attempt to procure additional recruits. Chennault would have to do with what he had. On the eve of war, the Air Staff had under consideration a proposal to reinforce the Chinese defenses of Kunming with Philippine-based planes of the AAF in the event of an anticipated attack on this terminal of the Burma Road.¹³

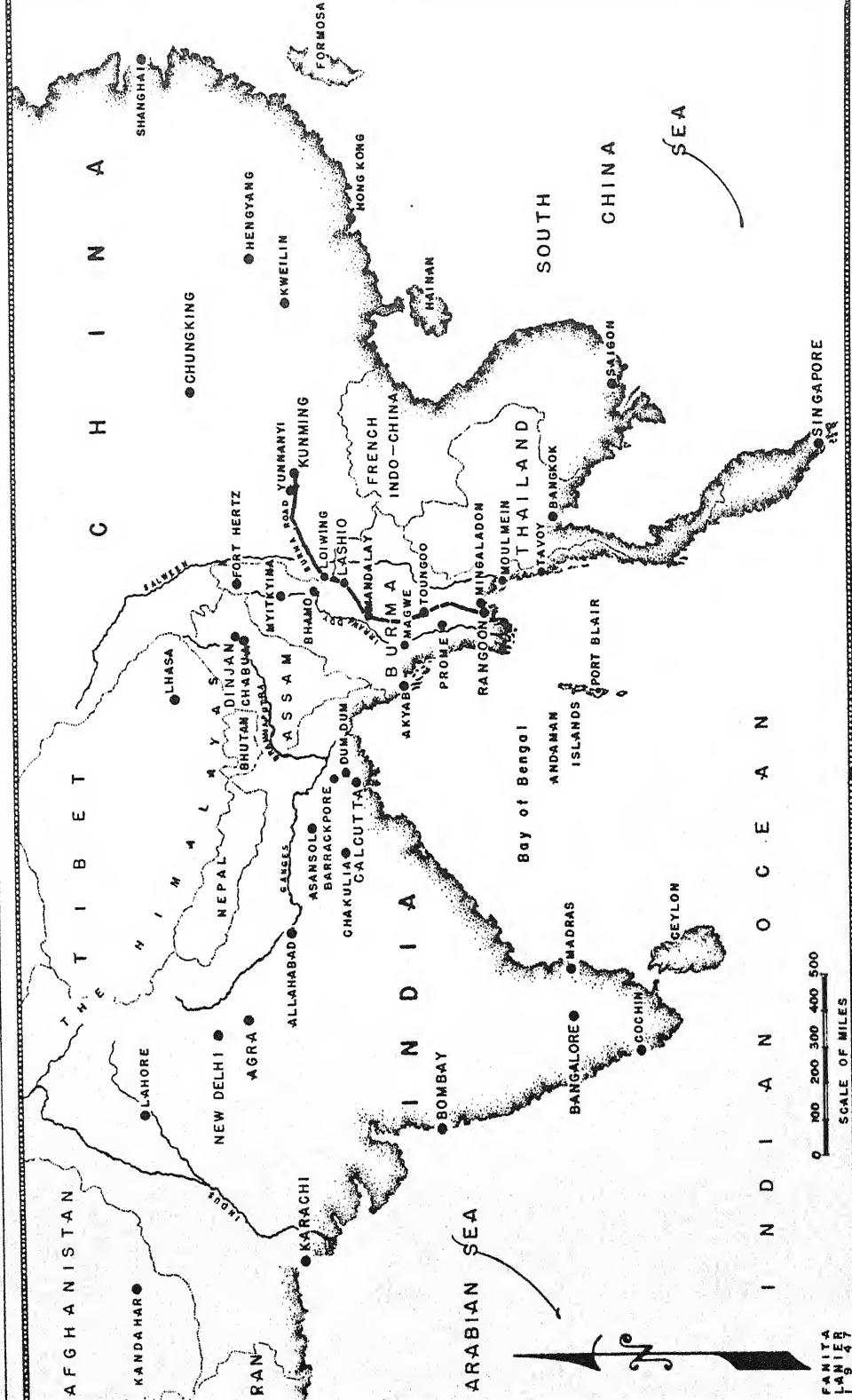
A cardinal feature of Chennault's plan was to avoid commitment of his force until it had been thoroughly trained and never to commit it piecemeal. General Magruder had been instructed to lend every assistance against possible pressure for a premature commitment.¹⁴ But after 7 December 1941, Rangoon, chief port of entry in Burma for supplies reaching China over the Burma Road, came under the threat of Japanese attack; and in response to a British appeal, one squadron of the AVG was sent to Mingaladon on 12 December. During the following week, the other two squadrons were moved east to Kunming for protection of the cities of southwest China and for patrol of the Burma Road, now subject to attack from near-by fields in Thailand. There, the AVG pilots first entered combat when, on 20 December, they inflicted heavy loss on Japanese bombers attempting an attack on Kunming. Three days later, the P-40B's at Mingaladon inflicted comparable damage on a formation of enemy planes attacking Rangoon.¹⁵

As the battle for Burma became increasingly bitter, Chennault adopted a policy of rotating assignments that would give each squadron brief periods of comparative relaxation at Kunming, where combat missions were somewhat less frequent and exhausting. He resisted pressure to commit the entire AVG to Burma and divided his planes so that in addition to collaboration with a small RAF contingent in defense of Rangoon, he provided patrol of the Burma Road and a measure of support for Chinese ground forces along the Salween River.¹⁶ The policy followed actually represented the piecemeal commitment he had planned to avoid; but it enabled him to assist in holding the port of Rangoon until some of the supplies stockpiled there had been moved out for shipment to China, to protect the Burma Road

during that movement, and to provide after the fall of Burma the nucleus of an American air unit that would fight on in China.

The planes in their operations followed closely, however, preconceived tactical patterns. Using a two-ship element in hit-and-run tactics, the pilots extracted the fullest advantage from the superior diving and level-flight speed of the P-40B, while nullifying the enemy fighter's superiority in maneuverability and rate of climb by avoiding dogfights. Against his bombers they also used a diving attack, frequently coming out of the dive to strike the bomber from below. The ruggedness of the P-40 and its superior firepower, together with an emphasis on accurate gunnery, constant reliance on the two-plane element, and the valiant work of ground crews enabled the "Flying Tigers" to destroy an almost incredible number of the more fragile Japanese planes while sustaining minimum losses. Even when the enemy after his first experience sought to wipe out the RAF and AVG contingents in Burma by sending an overwhelming fighter escort with his bombers, the air discipline of the American pilots held and kept down their losses. More serious losses were sustained in strafing attacks on the airfields they used, but the Volunteers to the last managed to keep a few planes in condition and offered at least a token resistance to almost every enemy attack. By the end of February, however, Rangoon had become a shambles, and during the first week in March the AVG pilots withdrew to Magwe. Following a heavy enemy attack on Magwe, they retreated over the China border to a forward base at Loiwing, where the Central Aircraft plant had been converted into an overhaul depot.¹⁷ By the close of April the campaign for Burma was approaching its end, and the squadron was forced back to Kunming, where it joined the remainder of the group.

The Burma Road was now useless, and Chennault, who had been recalled to active duty in April and promoted to brigadier general, sent part of his force east to Kweilin and Hengyang. This deployment promised better protection for the exposed cities of unoccupied China, and a fuller opportunity for activity against Japanese air forces. The AVG for all practical purposes had long since become a part of the armed forces of the United States, and plans had been made for its incorporation into the AAF. But the AVG was a volunteer group in fact as well as name; many of its personnel had no former identification with the AAF, and upon the dissolution of the



organization they would enjoy a very real freedom of choice. Accordingly, at the request of the Generalissimo, formal action had been postponed until regular AAF units could be sent to assure continuity of operations.¹⁸ Meanwhile, a shipment of P-40E's had been sent to Takoradi on the west coast of Africa, where they were assembled for ferrying to China. A few of these planes reached the AVG before the fighting in Burma had ended; others followed in May and June.¹⁹ And in the latter month, pilots of the 23d Fighter Group,* which had been selected to replace the AVG, began to arrive under a plan to use them as replacements for the Volunteers until the new unit had built up sufficient strength to take over. There would be no break in the support rendered our Chinese allies by American pilots, however inadequate that support might be.

The Tenth Air Force

Meanwhile, in India the newly organized Tenth Air Force struggled with peculiar problems of command, mission, and impotence. On the collapse of the ABDA effort, it had seemed to Generals Brett and Brereton that Burma afforded perhaps the best opportunity for a continued resistance to the Japanese. Though Australia as well as Burma now was threatened, the latter presented the more immediate need for reinforcement. Tavoy had fallen to Japanese invaders as early as 19 January and Moulmein on 31 January; and as the enemy paused to bring up additional forces, Rangoon was the logical objective of a renewed thrust. An attack on Rangoon inevitably raised the question of continued supplies for China; and China, in addition to her own ability to engage the enemy, offered the promise of air bases within reach of sea communications upon which Japan's victorious forces depended, and even within reach of Japan itself. As for the possibility that AAF bombers might make an immediate contribution to the defense of Burma, Brady (by then a brigadier general) had reported that heavy bomber operations against Bangkok and Saigon would be feasible from Akyab through use of Magwe and Toungoo as advanced bases.²⁰

The objectives thus tentatively set at the time of Brereton's departure from Java received support in Washington, where there was a keen awareness of the importance of aid to China. At the ARCADIA conference in January, it had been agreed that a high-

* Pursuit units were redesignated "fighter" on 15 May 1942.

ranking United States Army officer should be sent to the Far East to provide liaison between Generalissimo Chiang Kai-shek and the ABDA Command, and early in February, Lt. Gen. Joseph W. Stilwell, who had once served as military attaché at Peking, received notice of his appointment as commander of U.S. Army forces in the newly created China-Burma-India Theater of Operations.²¹ Following the assignment of the recently activated Tenth Air Force to this theater, an advanced bombing detachment, known as FORCE AQUILA, was prepared under the command of Col. Caleb V. Haynes for a flight across the Atlantic and African routes to Karachi, with the eventual mission of bombing Japan from Chinese bases. Even as the end of resistance in Burma approached, plans were carried forward for another bombing project in China, one that was somewhat similar to Doolittle's Tokyo mission in that there was provision neither for reinforcement nor replacement. Called HALPRO for its commander, Col. Harry A. Halverson, its departure was so delayed that it reached the Middle East during the crisis there in June, was pressed into service against the Germans,* and never reached the CBI.²² Colonel Haynes had reached India in early April, but with a force insufficient for, and under circumstances unfavorable to, the execution of his original mission.

The air force over which General Brereton assumed command on 5 March was largely an organization existing on paper. He had eight heavy bombers, the six brought up from Java and two B-17's which had come in from Africa, eight bomber crews, and a few staff officers. The entire force was put to work three days later, not as bombers but as transports which from 8 to 13 March in an emergency operation transported 474 troops and 29 tons of supplies from India to Magwe in Burma, evacuating on the return flights some 423 civilians.²³ Toward the close of this initial operation, reinforcements arrived from Australia, but instead of a fully equipped pursuit group, as expected, there were only ten P-40's. Moreover, examination proved that most of the basic equipment of the units, including badly needed trucks, had been left in Australia, and for safety it had been considered necessary to send the ships around to the western port of Karachi.²⁴ The British had evacuated Rangoon during the preceding

* In fact, the Halverson Detachment, together with the detachment flown in from India by General Brereton, formed the nucleus of the Ninth Air Force, which from 1942 to the fall of 1943 fought in the Middle East under Brereton's command. (On HALPRO, see above, pp. 341-42.)

week, and Calcutta, chief port of India, had been rendered unsafe by enemy action on the periphery of the Bay of Bengal. The loss of all Burma seemed imminent, an invasion of India not unlikely.

Hope of substantial reinforcement, even the prospect of receiving the minimum administrative complement of an air force, depended upon a line of communications extending across the Indian and Atlantic oceans by way of the Cape of Good Hope, for Australia had need of all the limited resources available there. Moreover, the Japanese conquest of Java and the prior fall of Singapore had made the passage from Australia to India altogether too hazardous. The first convoy from the United States for India—carrying the Headquarters and Headquarters Squadron of the Tenth Air Force, the ground echelon of the 23d Pursuit Group, the 3d Air Depot Group, and personnel of the 1st Ferrying Group—was dispatched promptly enough on 19 March from Charleston, South Carolina. But with calls along the way at Puerto Rico, at Freetown, and at Capetown and Port Elizabeth in South Africa, this convoy would not reach India until mid-May.²⁵

Fighter planes, meantime, had been shipped by water to the west coast of Africa for delivery by ferry to India. The first of them began to come into Karachi in April, but losses in transit were heavy and the planes themselves were destined ultimately for China.²⁶ As for the sorely needed bombers, production was as yet unequal to the urgent demands of the several theaters, the expanding training program, the Navy, and our allies. Moreover, the ferry route across the Atlantic and Africa, still imperfectly developed and incompletely manned, exacted its toll of delay and loss en route.* There was an additional factor of misunderstanding between Washington and the theater, attributable to the inadequacy of communications and the unavoidable confusion which marked the first months of war, as to the number of planes actually on hand in India. Thus, War Department records indicated in mid-March that eighty P-40E's had been delivered by the Australian convoy, and that nineteen B-17's had been reassigned from Java to India. It appeared, then, that the Tenth Air Force possessed in the 51st a full pursuit group and with the 7th the equivalent almost of one equipped heavy bombardment group, when actually there were only ten P-40's and the B-17's were for the most part strung along the ferry route awaiting repairs or spare parts.

* See above, pp. 339-40.

Similarly, misunderstanding developed regarding the movement of P-40's for the 23d Group. In the absence of exact information as to the rate of their progress across Africa, the War Department was inclined to assume that unreported planes had reached India, when many were stopped along the way, some of them wrecked beyond repair and others requiring a major overhaul before they could continue. Even when a plane had arrived at Karachi, its engine was probably burned out and would have to be replaced—at a time when aircraft engines were almost as scarce as the aircraft themselves.²⁷

Exact figures for this early period are virtually impossible to establish. But the whole story can be put in a capsule: in June, General Brereton left for the Middle East with virtually the entire striking force of the Tenth; in so doing, he took out the approximate equivalent of the tiny force of which he had assumed command four months before; and in the interval it had been possible to conduct operations only on the most meager scale.

In March, the impending loss of all Burma and the threat to India itself had resulted in the selection of Karachi as a port of entry and a center for the preparation of incoming organizations. Located on the western side of India, it was free, for the moment at least, from the threat of enemy interference and was advantageously situated with reference to air and water routes upon which operations in the CBI would be chiefly dependent. To General Brady was assigned the responsibility for establishing there a reception, classification, and training center that eventually, together with the installations of the Air Transport Command, became one of the major centers of AAF activity in the East.*²⁸ Brig. Gen. Raymond Wheeler, of the Services of Supply, came there from Iran to undertake, while preparing plans for theater supply, improvement in the docking and storage facilities of a port hitherto not fully developed.²⁹ Meanwhile, the several hundred AAF personnel who had recently arrived from Australia gave their attention to the completion of a partially prepared British encampment for their own occupancy and to the inauguration of a training program. There was plenty to do, but morale inevitably reached an unusually low ebb. A thousand miles from the battle in Burma, their handful of planes was held in anticipation of enemy moves which might include attacks on the western ports of India; yet there were not enough aircraft even for training. Pilots and crews

* See above, pp. 333, 340.

who had lost their edge on long sea voyages grew more stale as they awaited their turns with the few planes on hand. Shortages of tools and other equipment were acute. The men lived in an area barren of trees and grass on the edge of the Sind desert, from which sand and dust provided a well-nigh constant annoyance. Rations were British. Reading matter, cigarettes, candies, beer, and ordinary post exchange supplies were unobtainable. Worst of all was the lack of mail. Having been constantly on the move, most of the men had received no news from their families since leaving the United States in December or January.³⁰

General Brereton located his own headquarters at New Delhi in order to be near the several British authorities with whom he would have to deal, and there in March he held a series of conferences on some of the larger questions pertaining to the establishment of the Tenth. The critical shortage of shipping directed the attention of the conferees particularly to resources available in India, for it was evident that a policy of living off the land would have to be followed insofar as it was possible. There were delays because of the necessity for co-ordination of action with both London and Washington, but the discussions progressed smoothly and prepared the way for successful collaboration in the implementation of policies which over the ensuing years assured, under the provisions of reverse lend-lease, substantial assistance for the Americans.³¹ Fortunately, in April a technical mission headed by Mr. Henry F. Grady arrived from the United States for a comprehensive survey of Indian resources with reference to the needs of American forces, and it thus became possible for General Brereton to concentrate on pressing matters of a more strictly military nature.³²

Already Brereton had passed on to AAF Headquarters the benefit of his firsthand experience with combat units in the Philippines, Australia, and Java. While recognizing the critical need which had forced the sending out of imperfectly trained units even before the outbreak of hostilities, he now urged that personnel be fully trained and equipped before shipment overseas, whatever cost of delay in forwarding reinforcements might be entailed.³³ His suggestions included detailed recommendations for training and improvement of equipment and tactics.³⁴ For his own force, he pleaded especially for medium bombers. Limited target areas located at distances which precluded the use of fighter escort, the lack of reconnaissance and photo-

graphic units, and unfavorable atmospheric conditions combined to make high-altitude bombing of questionable value and argued for the superior speed of the mediums. The supply at the time, however, was unequal to the demand, and only in late April was it agreed, in partial concession to his continued requests, that the 7th Bombardment Group should be converted into a composite group of two heavy and two medium squadrons, the latter to be equipped with B-25's.³⁵ Not until July did the B-25's arrive in sufficient numbers to permit commitment of one of the squadrons to combat. He also sought fighters superior to the P-40, and received the promise of P-38's at some indefinite time in the future.³⁶ But the Tenth would get along with the P-40 for more than a year, and for a while yet with few of them.

Although General Brereton had brought out of Java a few key personnel for the new air force, there were several important posts for which no qualified men were available. Consequently, one of his first acts after assuming command had been to radio Washington asking assignment from the staff of the North African mission in Egypt of Col. Victor H. Strahm to be his A-3 and Brig. Gen. Elmer E. Adler to establish an air service command. The assignment of Strahm was promptly approved, but some delay was experienced in securing the transfer of General Adler, who as chief of the air section of the North African mission since the fall of 1941 had gained a variety of experience which made him especially well qualified to undertake the planning and establishment of air services in the new theater. Not until 26 April did he arrive in India. With him came Lt. Col. Reuben C. Hood, Jr., and Capt. Gwen Atkinson, and on 1 May, with only Adler, Hood, and Atkinson on hand, the air service command was activated.³⁷ Until the arrival of the convoy from America two weeks later with supplies and additional personnel, the command remained in effect a small planning staff.

Meanwhile, to Brereton's chief of staff, Brig. Gen. Earl L. Naiden, had fallen the task of planning an air transport service from India to China, a problem that took on increasing significance as the Japanese pressed forward in Burma. Foreseeing the loss of Rangoon, the War Department had directed Brereton shortly after his arrival in India to survey an air route for the movement of supplies from India to Chungking.³⁸ At the time, it was felt that central and northern Burma could probably be defended; and so the problem appeared to be that of providing for an air lift of supplies from Assam in the

extreme east of India to bases in Burma for transfer to Chungking by land transport. General Naiden's survey indicated that the normal run should be between the RAF base at Dinjan and Myitkyina, with occasional runs as far as Yunnanyi after the monsoon was spent. There was only one airdrome suitable for the purpose at Dinjan, where three would be required, and the unusually heavy rainfall of the region left little prospect that the additional fields could be made ready before fall. A field at Myitkyina could be put in satisfactory state by 15 May, and two others could probably be completed by November. With these limitations, he doubted that more than twenty-five planes could be operated, and he anticipated that the service would be uncertain during the approaching rainy season.³⁹

Though the Americans had not yet had time to explore thoroughly the idiosyncrasies of the Indian transportation systems, it was already evident that they must depend upon air transport between Karachi and Dinjan hardly less than from Assam to Burma. Accordingly, by the end of March, General Naiden had drafted plans for two transport commands: the Trans-India would operate between Karachi and Dinjan, and the Assam-Burma-China would run from Dinjan to Myitkyina and occasionally to Loiwing under a plan to extend the service in time to Kunming and Chungking. Col. Robert Tate eventually assumed command of the Trans-India operations. Colonel Haynes, then en route to India with a flight of transports and bombers, was chosen for the other command.⁴⁰ Pending Haynes' arrival, Col. William D. Old proceeded to Dinjan during the first week of April on assignment as executive officer and to take charge of preliminary arrangements.

His first immediate task, aside from the routine of providing quarters and supplies for personnel, was to assist in the delivery of 30,000 gallons of aviation gasoline and 500 gallons of lubricants to China for the use of Colonel Doolittle's Tokyo raiders, then already at sea aboard the *Hornet*.^{*} Ten Pan American DC-3's from the trans-African contract services had been made available to haul the gasoline, of which 8,000 gallons were in Calcutta, where the tactical situation demanded that it be moved immediately. There was not enough storage space at Dinjan, and so two of the transports on 6 and 7 April hauled the fuel from Calcutta to Asansol in western Bengal, whence it was subsequently transferred via Dinjan to China.⁴¹

^{*} See above, pp. 438-44.

Colonel Haynes arrived at Dinjan to assume his new duties on 23 April. With him was Col. Robert L. Scott, who had flown out in the same flight from the United States, and they were joined at Dinjan by Col. Merian C. Cooper. The task confronting them, to say the least, was discouraging. Although the equipment of the Americans was limited to thirteen DC-3's and C-47's, the single airfield already accommodated two British squadrons and was so crowded as to make proper dispersal of aircraft impossible. While barracks were under construction, the men were housed in mud and bamboo bashas with dirt floors. Messing facilities were poor; the quality of the food worse. Quartered more than ten miles from the airdrome, the Americans depended entirely on the British for ground transportation.⁴² Even more disconcerting was the absence of anything approaching an adequate defense against air attack by the Japanese. A single British pursuit squadron operated without benefit of an air warning system, and there were no antiaircraft guns.⁴³ To avoid the probably disastrous effect of a sudden attack, the Americans undertook to get their planes into the air by dawn, and all servicing and cargo operations for planes landing during the day had to be handled with the utmost expedition. Under these circumstances, ordinary working hours were out of the question. The men generally worked from long before daybreak until late at night.⁴⁴

The command had begun operations at a crucial point in the Japanese campaign for Burma. Following his capture of Rangoon, the enemy had grouped forces for a drive on Mandalay, key city of central Burma. General Stilwell, commanding the Chinese Fifth and Sixth armies, joined the British in an attempt to establish an effective line of defense. But by 25 March the Japanese had passed beyond Toungoo, by 2 April had forced the evacuation of Prome, and thus compelled the Allied forces to abandon their first line of defense. Their withdrawal to the north turned into a full retreat, and then under incessant pressure from the Japanese into a rout. Unable to challenge seriously the enemy's supremacy in the air, meager RAF and AVG forces withdrew. During the last week in April, Lashio, railhead for the Burma Road, fell; and by the opening of May, Mandalay had been captured. The campaign drew quickly to a close. On the 6th the Japanese made their position in the southeast secure by taking Akyab on the Bay of Bengal, the point originally selected by General Brady as a base for American bombers. The following day

they moved into Bhamo, and on 8 May the enemy climaxed his northward drive by capturing Myitkyina, key base in the current plan for maintaining an air cargo line to China. With this defeat, Allied resistance on the ground for all practical purposes ended, the AVG squadron withdrew to Kunming, and Stilwell began his famous walk out of Burma.

To the Allied defense against this drive, the Tenth Air Force had been in no position to make a direct contribution. Conferring with Stilwell on 24 March at Magwe, near the current fighting, Brereton had reported that his air force would not be ready for combat for another month, an estimate which proved in fact to have been optimistic. Its assistance in combat was necessarily limited to the indirect aid provided by a few bombing missions which, considered either individually or collectively, can be regarded as having little more than a nuisance value.

The first combat mission of the Tenth was flown on the night of 2 April. Brereton planned two missions for that date, one against the Rangoon area and another against shipping targets in the region of the Andaman Islands, where a Japanese fleet that included carriers was reportedly assembled for an attack on Ceylon. At Asansol one of the two B-17's assigned to the Rangoon mission cracked up on take-off with loss of its entire crew, and though the second took off well enough, it was forced by mechanical failure to turn back to base before reaching the target. That night the second mission, led by Brereton in person and flown by two B-17's and one LB-30, successfully attacked enemy shipping near Port Blair in the Andaman Islands. Having dropped eight tons of bombs from 3,500 feet, the crews claimed hits on a cruiser and a transport. Antiaircraft fire both from the ships and from batteries on shore was encountered, and the planes subsequent to the bombing were attacked by enemy fighters. Two of the bombers received damage, but all returned to base.⁴⁵

At General Stilwell's insistence, the Tenth thereafter devoted its attention to the Japanese in Burma.⁴⁶ On 3 April six bombers took off from Asansol to strike at docks and warehouses in Rangoon. Incendiary and demolition bombs were used to start three large fires; no resistance from enemy pursuits developed; one B-17 was lost on the return trip, cause unknown.⁴⁷ By 16 April the planes had been put in good enough shape to send again six bombers to Rangoon. Having taken off this time from Dum Dum near Calcutta, they first dropped

flares to illuminate the target and then unloaded forty-two 250- and 300-lb. bombs. No enemy fighters challenged the effort and heavy flak was evaded, but numerous searchlights made it impossible to estimate the results of the bombing. Once more, on 29 April, a flight of bombers hit the docks at Rangoon with 500-lb. bombs. The enemy put up interceptors and antiaircraft fire, but all planes returned without damage.⁴⁸ On the nights of 5 and 6 May, the bombers struck at Mingaladon, former RAF airdrome near Rangoon which the Japanese were using as a base for interceptors. On the night of the 5th, two flights of two B-17's each scored hits on a hangar and parked planes; it was estimated that forty planes had been destroyed and twenty-five damaged, but searchlights, antiaircraft fire, and attacking enemy fighters made accurate observation difficult. On the following night, three B-17's scored a direct hit on a fuel dump. On the night of 9 May, six B-17's engaged in a joint attack on Mingaladon and the Rangoon docks. Though attempted interception by the enemy failed, it prevented accurate observation of bombing results.⁴⁹

At this point, attention was drawn from Rangoon by the capture on 8 May of Myitkyina. Recently counted upon as a key base on the air route to China, its airfield now represented a serious threat to the whole air cargo project. Dinjan lay within easy range of fighters based at Myitkyina, and until more adequate provision could be made for the defense of Dinjan, Myitkyina became a target of prime importance to Tenth Air Force bombers. The heavies ran their first mission in direct defense of the air cargo line to China on 12 May when four B-17's, flying from Dum Dum, heavily damaged the runways and fired several parked aircraft in a daylight attack on Myitkyina airfield. Two days later the attack was repeated with further damage to runways and the destruction of several buildings. After another two-day interval, a third attack followed. Reconnaissance after the mission revealed no signs of activity at the airdrome, which for a time at least was in an unusable state.⁵⁰

To the transport pilots themselves had actually fallen the most dramatic role for American airmen in the attempt to defend Burma. Pressed immediately on arrival at Dinjan into emergency deliveries of ammunition, fuel, and supplies to the Allied forces in Burma, they brought out on the return flights an increasing number of wounded troops and civilian refugees. When after the fall of Mandalay it became obvious that Myitkyina and Loiwing were also doomed, Army

pilots began to ignore the normal load limits. Planes built to carry twenty-four passengers often took off with more than seventy. Some of the civilian pilots vigorously opposed the practice at first, but after seeing military pilots flying incredible loads without mishap, they too revised their estimate of the capabilities of the planes and joined wholeheartedly in the effort. In the process, the DC-3 and its Army equivalent, the C-47, established a lasting reputation for dependability and durability under the most adverse flying conditions.⁵¹

Both Haynes and Old took regular turns as pilots during these emergency operations. All crews were badly overworked, but not a plane was lost, though the unarmed craft were completely at the mercy of possible interception by the enemy. As Allied defenses in Burma crumbled, the emphasis on cargo transport gave place to one on evacuation of personnel, and in a series of hairbreadth escapes most of Stilwell's staff was flown out to India.⁵² After the general himself elected to remain and walk out with what was left of his command, the transports dropped food and medicines to his columns on their slow trek to safety. On 21 May, Stilwell reached a village near the Burma-India border, whence he proceeded by air to Dinjan for conference with Generals Wavell, Brereton, and Naiden; and the major part of the air transport operation was over.⁵³ But for the assistance of columns which had chosen to move northward, food and supplies continued to be dropped whenever possible; and after it became apparent that the Japanese would not take Fort Hertz, one of the DC-3's successfully landed on a field reputed to be less than a thousand feet in length and took off with a load of disabled Ghurkas. The strip eventually was lengthened to render landings and take-offs less hazardous, and Fort Hertz assumed importance as a way-stop on the India-China transport line.⁵⁴

Questions of Command and Mission

The rapid Japanese advance through Burma had long since called into question most of the assumptions upon which original plans for the Tenth Air Force had been based. The Tenth now faced the question of whether its mission, at least for the time being, should be limited to the defense of India—indeed, whether there was much point in thinking of support for China until India had been made secure against threatening forces in Burma, the Bay of Bengal, and the Indian Ocean. In any case, it was clear that earlier concepts of air

transport operations for the movement of supplies to China had been overly optimistic; the crucial air link in the supply line would have to be longer than had been anticipated, and plans would have to be revised to take into consideration new operational hazards and a heavier demand for equipment and personnel. There were other questions of similar import and difficulty, but all of them tended to turn on a basic question of mission which had become involved in a somewhat complex problem of command.

Command difficulties had first arisen with the flying of the Tenth's initial combat mission on 2 April. At the conference between Stilwell and Brereton late in March, it had been agreed that the air force when ready would be used in support of Allied forces in Burma. General Stilwell consequently received with some surprise the news of the Andaman Islands mission; and General Brereton, who regarded the function of the heavy bomber as distinct from that of air-ground support, was similarly surprised to receive a prompt request from the theater commander for a report on the capabilities of the air force in order that he might plan for its use in support of critical ground operations.⁵⁵ The mission itself had been flown against enemy forces whose threatening position with reference to India and Ceylon caused the British to propose to Washington a close co-ordination of defensive efforts between the Tenth and the RAF, and on 15 April the War Department informed Stilwell that the American air force would be used in the Bay of Bengal and Indian Ocean area north of Ceylon in conformity with British plans.⁵⁶ But General Stilwell, fearful of the interpretation that might be placed on the action by the Chinese, protested a decision made without reference to him as theater commander and meanwhile withheld the appropriate orders to Brereton.⁵⁷ And so when the latter, who had been informed of the War Department message to Stilwell, was shown a message from the Air Ministry in London confirming the agreement and urging that it be put into immediate effect, he had little choice but to seek direction from the War Department, pointing out that he lacked instructions either from Washington or the theater. In reply, he promptly received a directive to co-operate with the British as requested.⁵⁸ But while this served well enough to clarify his immediate responsibility, it left a delicate problem of his relation to the theater command.

If there were elements of the comic opera in the continuing exchange of messages which preceded a general understanding that the

Tenth—whose largest mission to date comprised a total of six bombers—would remain under theater control but with instructions for the time being to co-operate with the RAF,⁵⁹ the exchange also revealed some of the extraordinary perplexities of the CBI that would add to the story of air operations in that theater an unusually complex chapter on administration. There was no escape from the necessity to base in India any effort for the support of air operations in China, and thus no possibility of indifference to the security of India itself. Yet, the forces available were wholly inadequate for either mission, and they necessarily served chiefly as a token of intent. Changes thus tended to acquire a significance altogether out of proportion to the forces involved. Fortunately, the fear of enemy domination of the Indian Ocean was soon eased by indications that the Japanese fleet was withdrawing its units to Singapore, that Port Moresby in New Guinea rather than Ceylon was the enemy's next objective, and by the British landing at Madagascar on 4 May, which coincided with the enemy withdrawal after the Coral Sea action. Accordingly, on 24 May the order committing the Tenth Air Force to operations under RAF supervision was rescinded by the War Department in a message to General Stilwell, who promptly replied that it would be recommitted to a mission primarily in support of China.⁶⁰

Thus the mission of the Tenth Air Force remained as it had been originally fixed, but that mission still presented its own peculiar problems of command. General Stilwell's responsibilities argued for the location of his headquarters at Chungking, while practical considerations indicated that Brereton's headquarters should be in the base area of India. At the same time, it was evident that the principal combat effort of AAF units in the CBI must be made in China. Hundreds of miles and imperfect communications consequently separated the two American headquarters, and, similarly, the ranking air headquarters would be far removed from the principal area of combat operations. Some of the difficulties inherent in this arrangement already had been indicated. When in March it became known that only ten P-40's were carried by the convoy from Australia, General Brereton sought the assignment to the Tenth of the pursuit planes destined for the AVG by way of Africa and Karachi, only to be turned down by the War Department.⁶¹ Thereupon, he suggested that the AVG immediately be inducted into the AAF and be assigned as a pursuit group under Chennault's command, to the Tenth Air Force.⁶² Induction of the

AVG had already been agreed upon, but subject to the provision of a full American pursuit group in China;⁶³ and on 10 May the War Department informed Brereton that the 23d Pursuit Group, scheduled to replace the AVG, would not be assigned immediately to the Tenth.⁶⁴ At about the same time he learned that HALPRO, as a special bomber project, would operate in China independently.⁶⁵

At this point, General Stilwell intervened to avoid the administrative inconvenience and embarrassment that would arise from the independent operation of two groups, each of them larger than the entire combat strength of the theater's air force. On 17 May he notified the War Department that, subject to further instructions from Washington, the Tenth Air Force would have charge of all preparations for reception of HALPRO, which would be assigned to the Tenth upon its arrival in the theater, and that Brereton's headquarters would control the induction of the AVG and command the 23d Group after the induction.⁶⁶ And this was the policy destined ultimately to prevail.

The AVG contracts were due to expire on 4 July, and the induction into the AAF of such of its personnel as so elected was set for that date. It was planned to place in China by that time a small force of medium bombers in addition to the 23d Group, whose elements as they arrived in the theater moved forward to come under the command of General Chennault.⁶⁷ In recognition of the geographical distance separating China from India and of General Chennault's experience and prestige, AAF fighter and bomber units in China would be organized into the China Air Task Force (CATF) assigned to the Tenth and commanded by Chennault.⁶⁸ The date for its activation also was set for 4 July.

Meanwhile, AAF detachments moved into China during May and June in preparation for the change-over. The movement of personnel and equipment was unavoidably slow and difficult, and not without disappointment—even tragedy. The first flight of B-25's earmarked for the CATF reached Dinjan on 2 June with Maj. Gordon Leland commanding. It was planned that on the following day the flight would be completed to Kunming after a bombing of Lashio en route. The planes belonged to the 11th Bombardment Squadron (M), recently assigned to the 7th Group and detached for service in China. In the face of an unfavorable weather report and against the advice of Colonel Haynes, the six planes took off early the next morning. They

unloaded their bombs on the Lashio airfield, but subsequently three planes—including that of Major Leland—crashed into a mountain side while flying through an overcast at 10,000 feet, and another plane was abandoned when it gave out of gas near Chanyi. Only two of the aircraft landed at Kunming, one with its radio operator who had been killed in a brush with enemy fighters.⁶⁹ Six other B-25's led by Maj. William E. Bayse, veteran of the Java campaign, arrived at Kunming without mishap during the next two weeks.⁷⁰ Some of the pilots had participated in the Doolittle attack on Tokyo.

Movement of the P-40's from Africa continued to be slow, and the induction of the AVG, from the first a perplexing problem, proved disappointing in its results. It had been hoped that the transition might be made without serious loss of personnel or reduction in the effectiveness of an organization which had so well demonstrated its fighting ability. Several weeks before induction was scheduled to take place, however, it had become obvious that only a few of the men could be retained. War-weary and eager to visit their homes before undertaking another long period of foreign service, they desired immediate leaves which the induction board was not authorized to grant. Some preferred to take remunerative positions with the China National Airways and Hindustan Aircraft companies rather than accept the grades offered them by the Army; many formerly belonged to the Navy or Marines and preferred to return to those branches of the service; some expressed resentment over the manner in which the induction was handled; and a few were not able to pass the required physical examination. Eventually when the induction board, presided over by Chennault and made up largely of Tenth Air Force officers, completed its canvass of the personnel, they found that only five pilots and a handful of ground men had chosen to stay with the AAF in China. Approximately twenty of the pilots agreed, however, to remain on duty until further replacements could arrive, and one of them lost his life in combat during this extra tour.⁷¹

Activation of the CATF on 4 July 1942 marked an important turning point in the war in China. But the AVG as it now passed into history had set the pattern for subsequent air operations in that theater, and its score of almost 300 enemy planes destroyed at a cost of less than 50 planes and only 9 pilots provided a challenging record for its successors.⁷²

Meanwhile, uncertainties existed regarding the control of the air

supply line upon which operations in China depended. Upon being informed early in March that development of the air ferry * to China would be a responsibility of the Tenth, General Brereton had requested that ferrying personnel and equipment sent to the theater be assigned to the air force. Brig. Gen. Robert Olds of the Air Corps Ferrying Command objected on the ground that such an arrangement would result in diversions from the transport service to combat organizations.⁷³ Brereton having renewed his request on 9 April, the War Department replied that policies relating to the movement and supply of planes would be administered throughout by a central office in Washington, but that insofar as ferry operations were affected by military developments in India the control would be exercised by Brereton. To this rather ambiguous explanation there was added the information that the air freight service from Assam to China would be operated by the 1st Ferrying Group under the control of Stilwell.⁷⁴ General Arnold, after Brereton had indicated a continuing concern over the uncertainties and confusion of command responsibilities,⁷⁵ attempted to clarify the problem in a message to Stilwell which declared that Brereton held responsibility and authority over aircraft between Karachi and Calcutta, while General Stilwell would control aircraft designated for service to China. The latter was also vested with authority to change the location of operating stations and ferry control detachments in both India and China. It further was promised that an officer who fully understood ferrying operations would be provided for Brereton's staff.⁷⁶ The general statement of policy, however ambiguous it seemed at the time, at least provided a principle of action which, with the passage of time and a better understanding by all parties concerned, permitted the development of a centralized control of strategic air services while not entirely ignoring the normal prerogatives of a theater command in the event of an extreme emergency. But the administrative division between trans-India and India-China operations ran counter to the arguments of experience soon gained in operating the service.

During his incumbency at Dinjan, Colonel Haynes had discarded

* Originally the term "ferry" was used in the CBI to describe organizations more largely concerned with air transport operations than with the ferrying of aircraft. It is possible that some of the misunderstandings which developed stemmed from this loose usage, which in turn reflects the general difficulty experienced in clarifying the many problems arising from this new type of air operation. (See above, Chap. 9.)

in effect the original plan for separate operation of the Trans-India and Assam-Burma-China lines. Manpower and storage space at Dinjan were unequal to the demands of a plan requiring transfer of cargo, and frequently Trans-India planes were sent on into Burma and China. Eventually, the two transport commands were merged as the India-China Ferry, which continued until the Air Transport Command took over in December 1942. Haynes was transferred to China in June for command of the bombers in the China Air Task Force, and Scott quickly followed under a similar reassignment for command of the fighters. Colonel Tate, commander of the Trans-India Ferry, subsequently took command of the India-China Ferry.⁷⁷

Despite uncertainties that would not be fully clarified for another six months, the pioneering pilots and transport aircraft of the Assam-Burma-China Ferry had shown the way for the famed "over the Hump" service that would follow. Although the volume of freight hauled had not been great, it had been carried under the most trying circumstances and with a degree of success which encouraged the continuation of plans that would depend upon air transport to a much greater extent than had been originally considered. Cargoes included passengers, gasoline, oil, bombs, ammunition, medical supplies, food, aircraft parts, a jeep, and two disassembled Ryan trainer aircraft. More than 1,400,000 pounds were moved eastward from Dinjan, and approximately 750,000 pounds were brought west on return trips.⁷⁸ And in addition, the men and planes had explored the possibilities of troop-carrying and supply-dropping over Burma—services destined to prove the key to victory in a successful reinvasion of Burma two years later.

Meantime, the arrival in mid-May of the convoy from the United States had permitted substantial progress toward the establishment of a service command. In addition to needed supplies, it brought the 3d Air Depot Group. Already Agra had been chosen as the most desirable location for the main depot, and negotiations for allocation of the site were completed by 19 May. On 28 May the air depot group arrived there to establish the 3d Air Depot, with Col. R.R. Brown as depot commander and Lt. Col. Isaac Siemens in command of the group. For a time the men lived in tents, while awaiting completion of barracks. Construction work depended heavily on native labor and, in the absence of enough heavy machinery, progressed slowly. American mechanics and aircraft specialists of various sorts doubled as

carpenters, ditch diggers, and at whatever other tasks needed to be done. There was work for all at Agra; and this, plus the evident progress made, prevented development of morale problems comparable to those existing earlier at Karachi.⁷⁹

The service command would serve both India and China. To assist in carrying out this large mission, the 59th Materiel Squadron (soon redesignated 59th Service Squadron) was divided into small base units to serve the needs of combat stations. The unit's headquarters was located at Allahabad, selected as base for the heavy bombers, and there, too, was stationed Base Unit Number One. Other base units were assigned to Kunming, Agra, Dinjan and Chabua, Chakulia, and Bangalore, the latter being the location of Hindustan Aircraft, Ltd., which was to be changed over by agreement with the British from a manufacturing plant to a repair and overhaul depot for American-made aircraft.⁸⁰ During May additional personnel for the service command arrived and received assignments. On 23 May, Lt. Col. Daniel F. Callahan was made chief, maintenance and repair division, and the following day Col. Robert C. Oliver reported to become chief of staff to General Adler, Hood taking the assignment as chief, supply division. No headquarters and headquarters squadron was created, personnel normally constituting such an organization being assigned to the Tenth Air Force and detailed to duty with the service command.⁸¹

By late June, Adler's infant command was beginning to function in the routine fields of receipt, storage and issue, distribution, maintenance, repair, overhaul, and salvage. Other duties requiring attention were local procurement, manufacture of certain items, and various responsibilities in connection with maintenance and repair work, which by that time had begun at the Hindustan plant at Bangalore. The command suffered with other organizations the common difficulties of the theater at this time—poor communications, shortage of motor vehicles, dependence upon unskilled or semiskilled native labor, and always the weather.⁸²

The combat force of the Tenth proper was still limited to a handful of heavy bombers, some of them badly worn. Its combat operations continued, therefore, on the scale set by its earlier missions to Burma. Turning on 25 May from its effort to assure the neutralization of Myitkyina airfield, it struck again that night with five B-17's at targets in the Rangoon area. One of the planes was forced to turn

back, two were damaged.⁸³ Attacks on Myitkyina were resumed on the 29th, when four planes bombed from 23,000 feet. The following day a similar attack was made, but as no enemy activity was in evidence on either occasion the attacks were discontinued.⁸⁴ During the first week of June, the small force undertook its final flights over Burma before the weather and a shortage of spare parts combined to ground the last of them.⁸⁵ Five planes attacked the Rangoon docks and harbor area on 1 June, reporting that one tanker had been sunk and that another had been left listing.⁸⁶ Three days later, two bombers struck at the same target area without observing the results; attacked by ten fighters, one plane was destroyed, another seriously damaged.⁸⁷ And this was the last until the monsoon lifted.

Brereton's Departure for the Middle East

By mid-June, when the monsoon had come, the Americans were beginning to appreciate the magnitude of the task involved in establishing and operating an air force in Asia. The report of the Grady mission, plus three months of experience gained by the Tenth, had revealed that even for a small force the logistical problem was staggering. Unable to use the more direct routes through the Mediterranean and across the Pacific, and forced to sail in convoys for protection against enemy submarines, ships from the United States required two months to make the 13,000-statute-mile voyage. Furthermore, the demands of more active theaters for cargo ships, transports, and escort vessels were so heavy that bottoms allotted to Asia were kept to the barest minimum.⁸⁸ And after the ships reached India the logistical problems were by no means at an end. Japanese naval and air action in the Bay of Bengal restricted the use of Calcutta and forced incoming ships to dock along the west coast, where only three ports of any importance were available—Cochin, Bombay, and Karachi. Cochin was entirely too far south to serve as an American port of entry; Bombay was overtaxed with British shipping. Hence, although heavy port equipment had to be imported and existing storage space greatly enlarged, the original choice of Karachi had been confirmed by subsequent study.⁸⁹

Had it been possible to use ports on the eastern shore, a third important problem might have been less troublesome; but dependence on Karachi forced a maximum dependence on the Indian railroads. Outside northwestern India, the railway system was not highly de-

veloped, and by American standards was grossly inefficient throughout. Four different gauges of track required numerous extra handlings of freight by slow-moving, physically weak native laborers. In eastern India, further delays were imposed by the use of ferries instead of bridges for crossing numerous streams; on the important Calcutta-Assam line of communications, there existed not a single bridge over the Brahmaputra River and its tributaries. The railways, already weakened by a transfer of locomotives and rolling stock to Iran and forced now to haul the products of the industrial centers of eastern India which normally went by sea from Calcutta, were unable to absorb American traffic without countless breakdowns and heart-breaking delays. After a two-month voyage from the United States, equipment generally took six additional weeks in moving from Karachi to Assam. For goods to reach Kunming from Karachi, unless entirely carried by air, it generally took longer than the voyage from the United States.⁹⁰ The highway system, which was in even worse condition than the railroads, could not accommodate any appreciable additional load. First-class, all-weather highways were rare, and even these generally were too narrow to permit two-way traffic. The best of them, too poorly graded and banked for efficient use by high-speed vehicles, were frequently rendered impassable by monsoon rains.⁹¹ Initially, however, the inadequacy of the highway system hardly proved a major handicap, since very few trucks were available to the Tenth. Because river boats ordinarily carried a considerable volume of freight on the Ganges and Brahmaputra rivers, that means of transportation was not overlooked in the early planning, and especially in plans for the movement of cargoes between Calcutta and Assam. Unfortunately the river-boat fleets, like rolling stock, required extensive replacements. Moreover, the railway system had not been planned to complement the riverways; main railway lines frequently paralleled the course of the rivers, and this was particularly true in eastern India.⁹² The communication system presented equally disturbing problems. Telegraph and telephone lines extended to practically every section of the country, but equipment and methods were hopelessly outmoded for military purposes.⁹³

In setting up an air transport service for aid in overcoming these difficulties, still other problems were met. Existing airfields had been located and constructed primarily with a view to commercial rather than military needs. Runways were generally too short and too lightly

constructed for use by either speedy pursuits or fully loaded bombers and transports. Repair and maintenance facilities, in addition to quarters for personnel, had to be provided on existing fields, while strategic requirements called for the construction of many entirely new installations. Local materials and native labor had to be used, which proved another retarding factor.⁹⁴

Another problem was the climate. India has been fittingly described as "too hot, too cold, too wet, too dry." Excessive rainfall during the wet monsoon retarded construction and restricted operations; dust conditions during the dry season caused heavy wear on aircraft engines. In those sections of the country in which Americans were stationed, the greatest trouble arose from the effects of excessive heat and humidity on personnel. Reduced resistance as a result of the enervating climate tended to make them easy victims of the many endemic diseases. Only constant alertness could prevent malaria, typhus, cholera, heat rash, and fungus growths from seriously crippling the air force.⁹⁵

Yet, by the end of June 1942 appreciable progress had been made in establishing the Tenth Air Force and preparing for postmonsoon operations. Approximately 600 officers and 5,000 enlisted men were on hand, while aircraft strength had increased sufficiently to permit a general eastward deployment of combat units. The 11th Bombardment Squadron (M), the 16th Squadron of the 51st Fighter Group, and the three squadrons of the 23d Fighter Group were already in Kunming; headquarters of the 7th Bombardment Group had moved to Barrackpore, near Calcutta, while its two heavy squadrons, the 9th and 436th, were established at Allahabad; advance parties of the two remaining squadrons of the 51st Group were in Dinjan to prepare for the arrival of its air echelon; and the 22d Squadron (M) was expected to begin operations from Andal at the end of the monsoon.⁹⁶

But before June had run its course, the build-up of the Tenth received a serious setback. The Combined Chiefs of Staff had regarded the Middle East and Far East theaters as interdependent, and had stipulated that plans for their reinforcement should remain flexible in order that units might be shifted on short notice to whichever area appeared to have the greater need.⁹⁷ And now in Africa, Rommel again had the advantage over the British, was indeed in position to challenge the whole Allied cause in the Middle East. Consequently, on 23 June, General Brereton received orders to proceed to the



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Middle East with all available bombers and to assume command of American forces there for the assistance of the British.⁹⁸ He was authorized to take with him all personnel necessary for the staffing of a headquarters, and all cargo-type planes required for transportation. Further, he was instructed to appropriate whatever supplies and equipment might be needed from India-bound cargoes passing through the Middle East.⁹⁹ Three days later he left India, taking with him General Adler, Colonel Strahm, and several other key officers,¹⁰⁰ and he was soon followed by the planes and crews of the 9th Bombardment Squadron (H).¹⁰¹ The most dependable ferry pilots were selected to transport ground personnel and equipment for the bomber detachment.¹⁰²

General Naiden, Brereton's successor in command of the Tenth Air Force, was left with a crippled air transport system, a skeleton staff, and virtually no combat strength outside the task force in China. The future of the Tenth, and with it the extent of our continuing aid for China, now depended on the news from the Middle East.

CHAPTER 15

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THE AAF IN THE BATTLE OF THE ATLANTIC

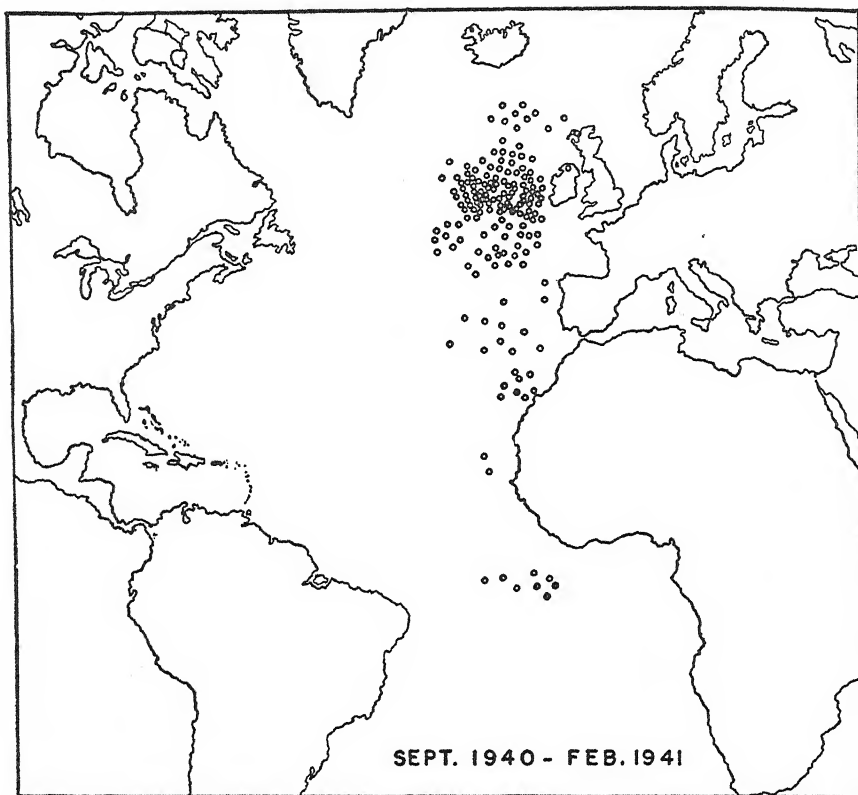
WHILE undertaking to meet the emergency demands of the Philippines, Hawaii, Java, India, China, Australia, the South Pacific, Alaska, and Panama, not to mention other requirements of hemisphere defense, the AAF had been forced to deal with still another emergency problem in the Atlantic. The Germans fully appreciated the fact that American participation in the European war would depend for its success on the free and rapid movement of supply. Consequently, with the entry of the United States into active warfare against the Axis, it became a key point in German strategy to extend into American waters the counterblockade already undertaken by the U-boat fleet in the eastern and northern Atlantic. Except for a few planes which through the latter part of 1941 co-operated with the Navy in patrol of the waters off Newfoundland, the air forces of the U.S. Army had received neither responsibility for antisubmarine warfare nor training in its techniques. But they found themselves immediately after Pearl Harbor committed extensively to antisubmarine patrol for want of other forces which were both available and competent for the task.

That the Germans would move their U-boats into American coastal waters as soon as practicable after the formal entry of the United States into the war was implicit in the military situation as it developed from 1939 to 1941. The U-boat fleet was the only weapon with which Germany could implement a counterblockade. And since 1939 the Germans had been operating against British and neutral shipping at every opportunity in a campaign which, after the fall of France, was greatly facilitated by the construction of five operating bases on the Bay of Biscay. In the beginning of the war the subma-

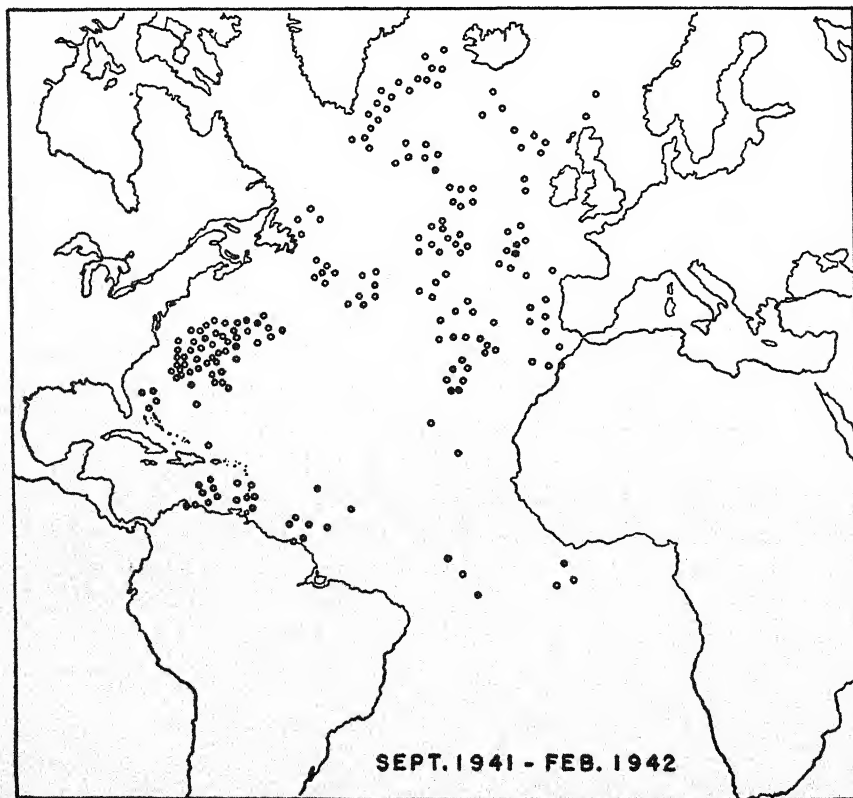
rines had concentrated on the waters adjacent to the British Isles. Then, when British countermeasures made those areas too dangerous, they had moved out into the convoy lanes. As air antisubmarine patrol became more effective (in the summer of 1941, nearly one-third of the damaging attacks against submarines were credited to aircraft),¹ the U-boats had moved still farther afield, extending their activity westward to 49° and as far south as Africa. By November, submarine activity off Newfoundland had brought from Adm. Harold R. Stark, Chief of Naval Operations, a request that the number of Army planes stationed at the Newfoundland Airport be increased to the full extent permitted by available facilities.² And from Newfoundland it was but a relatively short distance to the coastal frontiers of the United States itself.

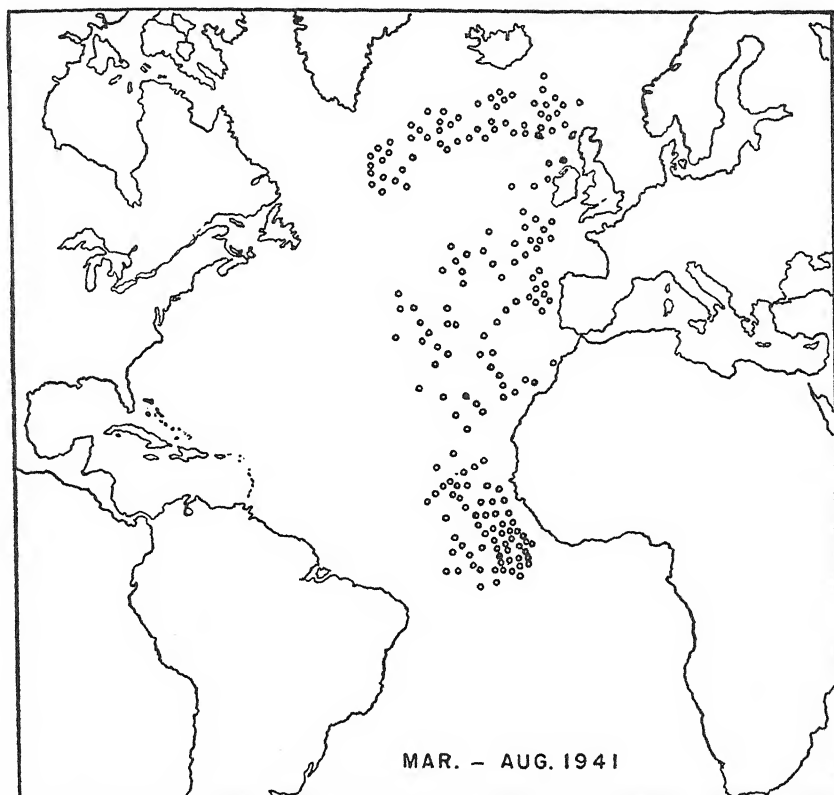
Indeed, the only surprising thing about the appearance of the enemy in U.S. coastal waters was that it took the U-boats nearly a month to become active there after our entry into the war. Adm. Karl Doenitz, who more than any one else in the German High Command was in a position to know the submarine situation, has since explained this delay by the fact that the Japanese attack on Pearl Harbor came as a surprise to Germany's political and military leaders. Hitherto, U-boat commanders had been restrained for political reasons from operating in American waters; and when the declaration of war removed those restraints, no submarines were immediately available for operations in the American coastal area. In December it proved possible to send out only six equipped for this purpose.³

When they came, however, the U-boats struck with deadly effect. Beginning on 31 December, both Army and Navy sources began to report the presence of enemy submarines in American waters. On 7 January, COMINCH (Commander in Chief, U.S. Navy) reported that a fleet of U-boats was believed to be proceeding southward from the Newfoundland coast for an objective as yet unknown. The objective became quite apparent when, on 11 January, the enemy sank the SS *Cyclops* off Nova Scotia and torpedoed the tanker *Norness* three days later off Long Island. These sinkings head the tragically long list of similar losses in the coastal waters which served to bring home to the American public the grim realities of total war. The situation rapidly grew desperate. During the seventy-six days following the sinking of the *Norness*, fifty-nine ships, amounting to a total of over 350,000 gross tons, went down in the Eastern Sea Frontier. Nor did

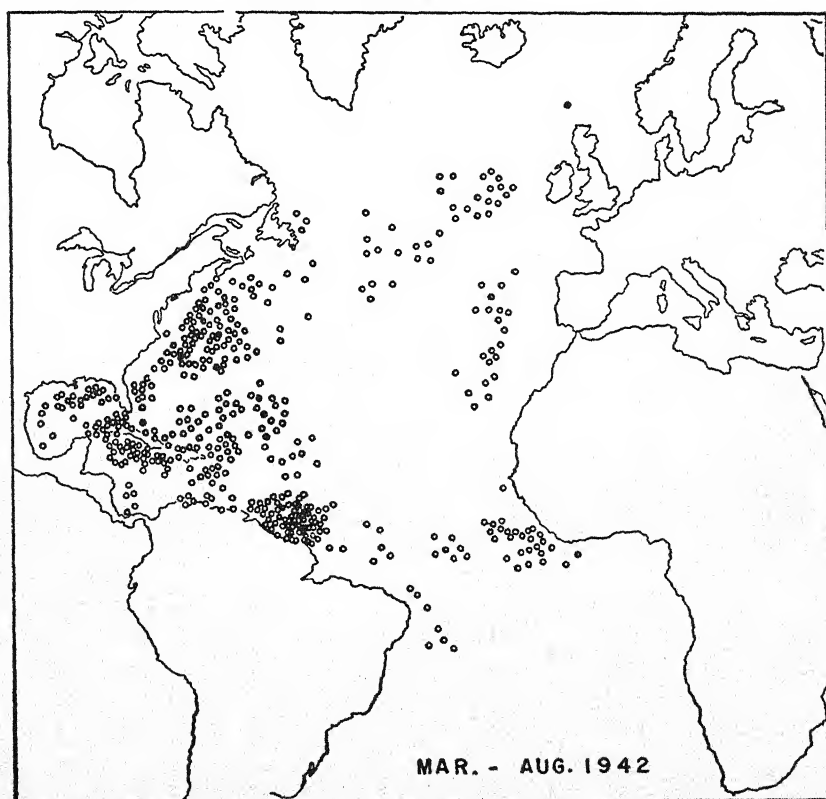


SINKINGS OF MERCHANT VESSELS





SEPT. 1940 — AUG. 1942



the German submarines confine their activity to that area. By February they were operating in the Gulf Sea Frontier where, during the ensuing two months, they accounted for eight merchant vessels. More alarming than this relatively light attack in the Gulf was the fact that by February a number of submarines had found excellent hunting in the Caribbean, especially in the waters off Aruba, Curaçao, and Trinidad; during February and March they sank a total of forty-two merchant vessels in the Caribbean Sea Frontier.⁴ In short, enemy submarines hunted with relative impunity along the American coasts and with such success that they threatened the entire U.S. strategy in the Atlantic.

One of the more remarkable facts about the war was the well-nigh complete state of unreadiness in which this emergency caught the nation. Although the German submarine campaign in World War I lingered in the memory of Americans as a chief factor in our involvement in that struggle, and although for two years past a second German campaign had given repeated warning that the submarine again would be relied upon chiefly to offset the weight of American resources, when war came no master plan existed for coping with the danger. It is true that we had extended our bases eastward to Iceland with a view partly to the patrol of waters through which our shipping must pass, and that in this effort the maintenance of air patrols had been a primary consideration. But seemingly no one had seen fit to develop comprehensive plans and forces specially designed to counter the U-boat threat. As a result, the American war effort was to be challenged until September 1942 by deadly assaults on coastwise shipping, and not until the following summer would we be free of the fear that Germany might effectively cut the line of supply which supported our own and our allies' operations in European and Mediterranean theaters.

Viewed broadly and from the vantage point provided by the lapse of time, it would appear that the situation required the immediate drafting of an over-all plan which viewed the Atlantic as a distinct theater of operations and brought together under a single directing agency all available resources to combat the submarine. In fact, such a proposal was ultimately made, and as the menace grew, vigorous efforts were expended to secure agreement at least on a plan to consolidate available air weapons in one command created specifically for the purpose of antisubmarine warfare and possessed of a strategic

mobility comparable to that enjoyed by the U-boat command itself.⁵ But all such efforts foundered on the rocks of interservice controversy. The story of the antisubmarine air effort becomes, therefore, in no small part a story of jurisdictional and doctrinal debate punctuated by a series of compromises ending in a final compromise by which AAF forces withdrew from antisubmarine operations on the understanding that the Navy would relinquish all claim to control of long-range air striking forces operating from land bases.

It is not the purpose of this chapter to provide a full narrative of AAF antisubmarine activity. The bulk of that story falls chronologically outside the limits of this volume. It is necessary here, however, to consider the emergency problem which confronted the AAF on the outbreak of hostilities and the developments which led to the creation of the Army Air Forces Antisubmarine Command in October 1942. The operations of that command and the controversy which overshadowed its brief existence—extending from the fall of 1942 through the summer of 1943—will receive separate treatment in the following volume.

The Question of Responsibility

Since the early development of military aviation in the United States, the Army and the Navy had differed on certain points regarding its control. With regard to land-based aviation engaged in seaward patrol, each service took a logical enough position. To the Army, land-based aircraft whether operating over land or water should be its responsibility. To the Navy, it seemed equally natural that operations over water against seaborne targets should be a naval responsibility. But since the air constituted a medium which extended over both land and water, arguments concerning its control could drift more or less at will for so long a time as national policy insisted on regarding the air arm as subordinate to either the Army or the Navy. It thus became a question that would have to be answered arbitrarily by some competent authority.

As early as 1920 it had been recognized that, in providing an air arm for both services, there lay a serious danger of duplicating installations and equipment. In that year Congress, accordingly, had determined that the Army air arm should have responsibility for all aerial operations from land bases and that to naval aviation belonged all air activity attached to the fleet, including the maintenance of such shore

installations as were necessary for operation, experimentation, and training connected with the fleet. This legislation provided the basis for the two air arms, but left undefined the responsibility in cases where joint action might become necessary.⁶

After 1935 the controlling statement of policy on such points was provided by Joint Action of the Army and Navy, an agreement which sought to clarify the relationship between the two services but which was marked at the same time, as previously noted, by ambiguity on certain crucial questions.* By its provisions, the Navy held responsibility for all inshore and offshore patrol for the purpose of protecting shipping and defending the coastal frontiers, whereas the Army held primary responsibility for defense of the coast itself. Army aircraft might, however, temporarily execute Navy functions in support of or in lieu of Navy forces; and, conversely, Navy aircraft might be called upon to support Army operations. In neither case should any restriction be placed by one service on the freedom of the other to use its power against the enemy should the need arise. Each service was declared responsible for providing the aircraft required for the proper performance of its primary function—in the Army's case, the conduct of air operations over land and such air operations over the sea as were incident to the accomplishment of Army functions; in the case of the Navy, conduct of operations over the sea and such air operations over the land as were incident to the accomplishment of Navy functions.⁷ All of which left the responsibility for the conduct of seaward patrols and the protection of shipping definitely up to the Navy.

But this formal agreement did not preclude further discussion. There remained, in particular, a question of command. It was still an open question whether the Navy should control all air operations in coastal defense or whether it should control only those operations specifically in support of the fleet. Naval spokesmen claimed that unity of command should be vested in whichever service held paramount importance in any given situation. Then, assuming that naval pre-eminence existed in coastal defense, they claimed that unity of command in such operations should rest with the Navy. The Army, sensing a train of thought which might prove ruinous to its control of air forces, raised its voice in protest. The assumption of naval pre-eminence in coastal defense, it declared unsound. In some situations

* See above, p. 68.

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land-based bombers might well be the principal arm employed. Furthermore, since most situations in which the Navy would be called upon for coastal defense operations would be ones in which the GHQ Air Force would also be involved as a striking force, the Navy would, according to its own argument, gain control of Army air forces in any tactical situation then considered likely to develop. This, the Army felt, might lead ultimately to Navy control of all air forces. As late as December 1941 the problem was still under debate; but unity of command in defense of the eastern coast, as far as joint air action was concerned, for practical purposes was vested in the commander of the North Atlantic Naval Coastal Frontier (NANCF).⁸

The Navy, then, at the outbreak of war was responsible for the protection of coastwise shipping and for the conduct of offshore patrol. In other words, the responsibility for the development of anti-submarine defenses lay with the Navy. The Army air arm, on the other hand, was obliged to act in support of or in lieu of naval forces should it be called upon to do so, that is to say, it had an emergency responsibility. In addition, Joint Action had explicitly stated that, regardless of the presence or absence of the fleet, the GHQ Air Force retained the responsibility for reconnaissance essential to its own combat efficiency as a striking force. Prior to 1939, however, Army aviation had been restricted from proceeding more than 100 miles beyond the shore line. There remains some question regarding the precise origin of this restriction, but the evidence indicates that it came initially from the Navy and was imposed in accordance with an agreement between the Chief of Naval Operations and the Chief of Staff, U.S. Army. Joint exercises held in 1939 for the purpose of Army-Navy training had occasioned a strong protest on the part of the Army air commanders concerned, who argued that it was impossible to maintain the navigational efficiency of their units without flights beyond the 100-mile limit. It was accordingly agreed that longer flights might be undertaken provided special arrangements were in each instance made "well in advance." Not only was this an administratively awkward arrangement calculated to discourage the development of any extensive training program, but the Air Corps thereafter became increasingly preoccupied with the many-sided problems of a gigantic program of expansion centering on the mission of strategic bombardment. December 1941 thus found those AAF

units best equipped for antisubmarine operations trained almost exclusively in the performance of their primary function of bombardment rather than in a secondary, emergency duty of antisubmarine patrol.⁹

More serious was the inability of the Navy to meet a crisis falling in an area of primary responsibility. Whether because of its traditional concern for the problems of the Pacific or for other reasons, the crisis of December 1941 found the Navy unable to perform the offshore patrol necessary in order to cope effectively with the submarines. The commander of the North Atlantic Naval Coastal Frontier (in February 1942 replaced by Eastern Sea Frontier), on whom fell the immediate responsibility for countering the submarine menace, reported that he had at his disposal on 22 December 1941, after other demands on his resources had been met, a force of some twenty surface vessels capable of taking limited action against submarines. This force he regarded as woefully inadequate for its task, since there was "not a vessel available that an enemy submarine could not outdistance when operating on the surface." "In most cases," he added, "the guns of these vessels would be outranged by those of the submarine."¹⁰ Nor was it possible to augment these forces to any appreciable extent before May 1942. Repeated and urgent requests for destroyers and escort vessels were denied by COMINCH on the ground that equally imperative needs existed elsewhere.¹¹ This inadequacy of surface forces naturally threw a heavier immediate burden upon available air resources, but strength in naval aircraft at hand for antisubmarine patrol proved equally insufficient. Of approximately 100 planes at the disposal of the NANCEF commander on the outbreak of war, the great majority were trainers, scouts, or transport types, unsuited for the task at hand. By the end of January the situation had improved slightly, though not in the category of long-range patrol. "There are," the NANCEF commander reported to COMINCH on 14 January 1942, "no effective planes attached to the Frontier . . . capable of maintaining long-range seaward patrols." In reply to his urgent request for at least one squadron of patrol planes, he was told that additional allocations depended on future production.¹² Here, as elsewhere in these early days of 1942, the demands made upon all services for men and equipment were great but the supply small.

So it was that the burden of antisubmarine patrol fell heavily on

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the Army Air Forces during December 1941 and the early months of 1942. Although neither trained nor equipped specifically for the purpose, Army units possessed aircraft whose range generally exceeded that of available Navy planes. As soon as the news of the Japanese attack at Pearl Harbor arrived, the NANCY commander requested the commanding general of the Eastern Defense Command to undertake offshore patrols with all available aircraft. Accordingly, on the afternoon of 8 December 1941, units of the I Bomber Command began flights over the ocean to the limit of their range.¹³

But it was a motley array of planes that I Bomber Command assembled in December to meet the submarine threat. At virtually the same time that it was called upon to undertake overwater patrol duties, it was stripped of the best-trained of its tactical units for missions on the West Coast* and for overseas assignment. Every available Army plane in the First Air Force capable of carrying a bomb load was drafted to augment what was left of I Bomber Command. As a result of these frantic efforts, approximately 100 aircraft of various two-engine types were assembled and placed at the disposal of the naval commander. To this force, likened by one observer to Joffre's taxicab army of 1914, the I Air Support Command added substantial aid in the way of reconnaissance.¹⁴

By the middle of January 1942, this Army patrol had gained a little in strength and regularity of operation. The I Bomber Command was by that time maintaining patrols at the rate of two flights each day from Westover Field, Massachusetts, Mitchel Field, New York, and Langley Field, Virginia, and was in the process of inaugurating similar missions from Bangor, Maine. These flights, averaging three planes each, extended, weather permitting and according to the type of plane, to a maximum distance of 600 miles to sea. The longer distances were covered only by the few B-17's operating from Langley Field, seldom more than nine of which were in commission. In addition to the aircraft of I Bomber Command, I Air Support Command operated patrols during daylight hours in single-engine observation planes extending about forty miles offshore from Portland, Maine, to Wilmington, North Carolina. These planes were not armed, nor did they carry sufficient fuel for more than two or three hours' flying, and not more than ten of them were maintained in the air along the

* See above, Chap. 8.

coast at any one time. On the whole, however, it was a creditable effort, considered as an emergency measure. By the end of January, I Bomber Command aircraft available for antisubmarine duty numbered a total of 119. Only forty-six of the aircraft could be considered in commission, but of this effective strength, nine were B-17's capable of long-range patrol, and the rest were B-18's and B-25's,¹⁵ both types capable of covering extensive stretches of the threatened sea lanes.

Even so, Army forces were themselves seriously inadequate. In addition to the insufficient number of AAF forces available, Army units began antisubmarine operations under serious handicaps of organization, training, and equipment. Hunting submarines was a highly specialized task, as all concerned found out during the next few months. Yet little had been done prior to the outbreak of hostilities to train and equip Army units for work of this sort or to establish a system of joint Army-Navy control. Some steps, it is true, had been taken to provide the means of co-operation between the services, with the result that a joint control and information center was ready for operation at New York four days after the opening of hostilities. Fortunately, the delay of nearly a month in the enemy's invasion of American waters gave the I Bomber Command time to organize some sort of wire communication service to all its bases, and to establish an intelligence system through which information could be relayed from headquarters to squadron operations rooms. But to the end of January the problem of transmitting intelligence remained a vexing one.¹⁶

In addition to the fact that most of the Army air units involved in the antisubmarine war were still in a training status, those best trained having been taken away for service in the west, they brought to their task equipment and experience conditioned almost entirely by the requirements of ordinary bombardment, which had little in common with antisubmarine attack. It is hardly surprising, then, that Army planes at first flew in search of U-boats armed with demolition bombs instead of depth bombs and manned by crews who were ill trained in naval identification or in the techniques of attacking submarine targets. Moreover, the aircraft themselves, although intrinsically better suited to this type of operation than most of the available Navy planes, nevertheless fell far short of maximum efficiency in antisubmarine patrol. All, with the exception of the few B-17's, possessed

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medium range only, and were relatively limited in their carrying capacity. And all as yet lacked special detection equipment.¹⁷

This, then, was the status of the air defenses which the United States could bring to bear against the enemy at the opening of a most critical phase of that costly and crucial battle of Atlantic shipping and supply. It was an inadequate effort, albeit the best that could be mounted in the existing circumstances. The explanation lies partly in the general state of American military preparedness existing prior to December 1941. The emergency in the eastern coastal waters was in a sense but one of several desperate situations which, taken together, stretched the resources of the U.S. armed forces in those dark days almost to the breaking point. But the weakness of the antisubmarine forces can be explained only in part by mere lack of men and equipment. It must be explained also in terms of a lack of the right kinds of equipment and of properly trained men—which, in turn, points unavoidably to faulty planning in the field of coastal defense during the years before the war.

But the opportunities of those years were now gone. The immediate question was what steps in addition to the first emergency measures should be taken to cope with the submarine attack. That question resolved itself into two parts: (1) what defenses could be provided on a continuing emergency basis; and (2) what systematic approach could be made to the entire problem.

In considering the contribution that could be made by the AAF to the solution of the initial problem, it must be borne in mind that there were many calls for planes but few planes in these first days of the war. At the very outset, reinforcement of the Philippines had been given the highest priority, and only by repossession of LB-30's from the British had it been possible to get out to the Netherlands East Indies the meager force which after sustaining heavy losses fell back on Australia. The demands of Australian defense itself outstripped the equipment salvaged from the Java operations. It had been necessary to send help to Hawaii. Growing concern for the security of the South Pacific, of Alaska, and of the Panama Canal prompted additional demands. The requirements of air transport placed still another premium on the very planes which because of their range were best suited to antisubmarine patrol. Nor was it possible while meeting these emergency calls to overlook the urgent requirements of an expanding training program which at the level of unit training de-

manded combat planes.* Little wonder that General Arnold, faced with the problem of parceling out inadequate resources, was able to make available for antisubmarine operations only limited forces.

Early Antisubmarine Operations

Within the limits imposed by the general emergency, the operational record of those AAF units—principally of the I Bomber Command—which participated in the antisubmarine war was on the whole very creditable. Life in the I Bomber Command moved at a hectic pace during the early months of war. The entire command had to be reorganized. Having been relieved during December and January of all but one of its bombardment groups (the 2d), it had in the first two months of 1942 to assimilate two new bombardment groups (the 45th and the 13th) and two reconnaissance squadrons (the 3d and 92d).¹⁸ These units were for the most part as yet untrained even in the normal techniques of bombardment, to say nothing of the special tactics of antisubmarine warfare. Thus the command was faced with the double problem of reorienting the training of its units and adapting all its equipment to meet the requirements of its enlarged mission. Moreover, most of the new techniques had to be learned through actual experience; and, owing to the urgent need for antisubmarine patrols, the air units were forced to accomplish their training in the course of operational missions.¹⁹

Though even more understaffed than most organizations in those days, I Bomber Command headquarters, under the command of Brig. Gen. A.N. Krogstad, attacked these complex tasks with resourcefulness and vigor. On 12 December, General Krogstad set up an advance echelon at New York City to conduct tactical operations in conjunction with the NANCf, and this detachment was followed shortly by the entire headquarters staff. On 24 January the system of joint defense was extended by the establishment of a liaison office with the Sixth Naval District at Charleston, South Carolina. The 66th Ob-

* As evidence of a continuing difficulty in reconciling the demand and the supply of equipment, it may be further noted that the emergency call from the Middle East in June was met by diversion of the Halverson detachment and the transfer of virtually all heavy bombers from India, that the 43d Bombardment Group (H) which had reached Australia in March did not receive its planes until September, that the Eighth Air Force began operations with only one heavy bomber group, and that the subsequent requirements of the North African operation served to keep the combat strength of the Eighth in heavy bombers at no more than six groups until May 1943.

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servation Group of the I Air Support Command with a few B-18's was placed under the operational control of this office in order to reinforce naval patrol in that area.²⁰

It soon became evident that successful warfare against U-boats demanded improved methods of joint control so that both air and surface forces might proceed to the scene of a U-boat sighting with the least possible delay. Here the British were able to offer valuable advice based on the already considerable experience gained by RAF Coastal Command in joint operations with the Royal Navy. With the help of RAF officers sent to America at the request of the Assistant Chief of Air Staff, Intelligence for the purpose of giving aid and counsel to the new antisubmarine force, steps were taken to make the joint control room in New York City truly a nerve center for joint action.²¹

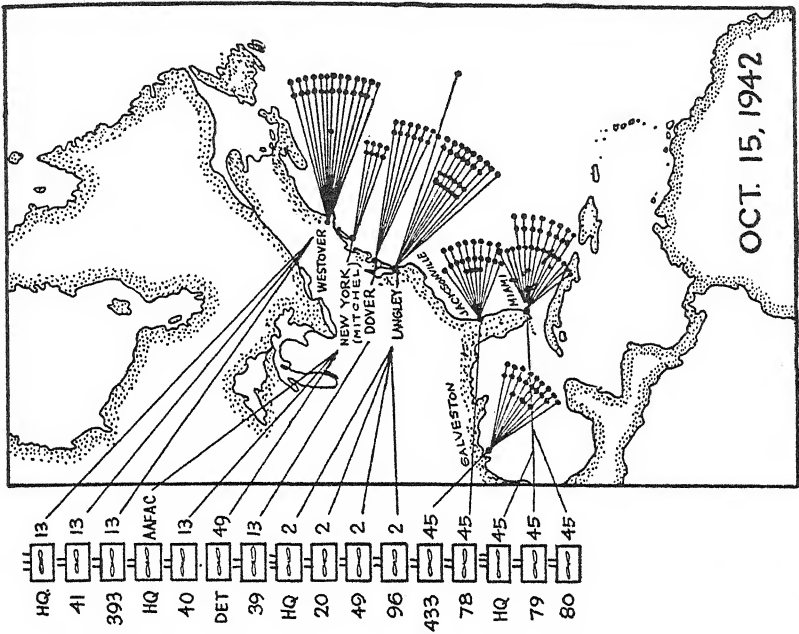
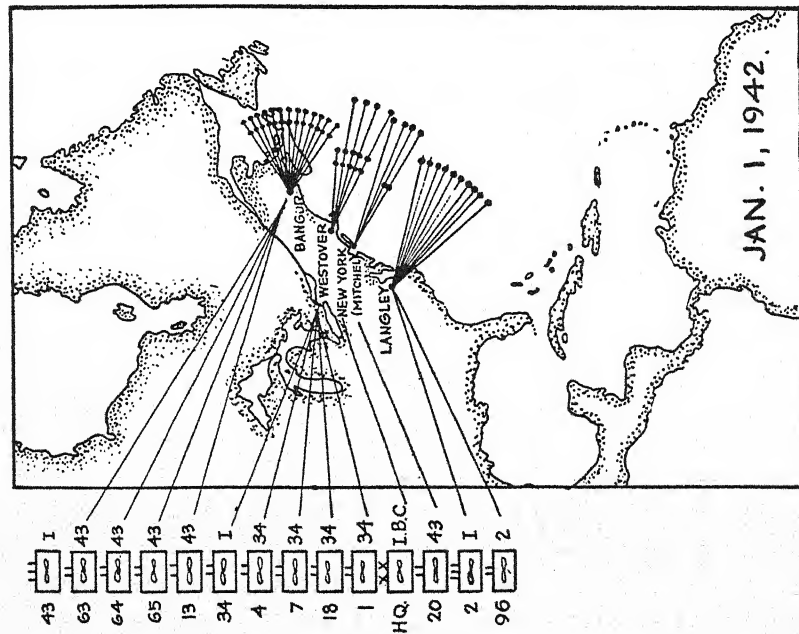
Naturally enough, this extreme activity on shore was not at once reflected in correspondingly improved operations at sea. Handicaps involving training and equipment could not be overcome immediately. In fact, the German submarines ran little risk from aerial attack during January and February of 1942. Although operational hours flown by Army planes in the Eastern Sea Frontier amounted to almost 8,000, only four attacks were made, none of which appears to have resulted in damage to the target. By the end of March the situation had improved perceptibly. The U-boats, it is true, continued in steadily increasing numbers to exact a mounting toll of merchant shipping. But they also were meeting rapidly stiffening opposition. I Bomber Command planes flew almost as many hours in March as they had in the previous two months put together.²² They still made relatively few attacks, and those they made left much to be desired. Yet this expanded air patrol, by forcing the enemy craft to remain submerged for increasing lengths of time, curtailed the freedom with which they had operated hitherto. It is also worth noticing that a few Army planes (four to be exact) had begun to carry radar equipment. More rapid increase in the use of this critically important equipment was prevented by a shortage both of new sets and of spare parts for the few old ones available. And much work remained to be done before the potentialities of radar for antisubmarine purposes could be realized.²³

In March, too, the Civil Air Patrol began offshore flights with the aircraft of its newly created Coastal Patrol. These civilian aircraft,

ranging from light single-engine to twin-engine types, as yet carried no bombs, and for the most part were unable to fly patrols of any great distance; but they managed nevertheless to relieve the Army units, especially those of the I Air Support Command, of some of the routine reconnaissance flying. They operated under the guidance of that command, which in turn served under the operational control of the I Bomber Command.²⁴

On 26 March 1942, an agreement was reached between the Army and Navy which clarified for the time being the relationship of both these Army air commands to the naval command. Heretofore the Army units had been operating under the control of the commander of the Eastern Sea Frontier, but the system rested on grounds outlined only very generally in Joint Action and of recent months rendered soft and untrustworthy by prolonged debate. There had even been talk of "mutual cooperation" rather than "unity of command." Some firm decision on the matter was therefore essential to efficient joint operations. It finally came in a message sent by the Joint Chiefs of Staff to the commanding generals of all defense commands which unequivocally vested jurisdiction in the sea frontier commanders over naval forces allocated thereto and all Army air units engaged in operations over the sea for the protection of shipping and against enemy seaborne activities. Lt. Gen. Hugh A. Drum, commanding general of the Eastern Defense Command, promptly made available to the commander of the Eastern Sea Frontier all units of I Bomber Command, I Air Support Command, and the Civil Air Patrol, with the exception of three bombardment and four observation squadrons which were held as operational training units for the training of personnel in sea search.²⁵

Generally speaking, the problem facing the AAF antisubmarine force had by the end of March assumed a more or less distinct outline. The I Bomber Command had made progress toward adjustment to the tactical situation into which it had been so suddenly thrust, but Brig. Gen. Westside T. Larson, who on 7 March had succeeded General Krogstad in command of the organization, was able to point out several impediments remaining in its path. Shortages in personnel and equipment, ineffective telephone and radio communication systems, a joint control room that, despite efforts made to improve it, still proved unsatisfactory—these were some of the difficulties he saw still to be overcome. In addition, he pointed urgently to the need for



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operating bases south of Langley Field and for increased mobility on the part of the units under his command in order that advantage might be taken of a wider operating area.²⁶

Any doubts regarding the necessity for extending the antisubmarine activity of the AAF and for increasing the mobility of its units were dispelled during the next two months by the Germans themselves who began rapidly to shift the emphasis of their attack toward the Gulf of Mexico and Caribbean areas. This move on the part of the enemy found American defenses again unprepared, and the shift in operating area was accompanied by a sharp rise in the number of merchant ships lost in the coastal waters. In April, twenty-three ships were lost in the Eastern Sea Frontier, as compared to two in the Gulf Sea Frontier. In May, the number lost to submarine action in the former dropped to five, while the corresponding figure for the latter rose to forty-one. This total of forty-six merchant vessels lost during the month represents the high point in the U-boat offensive in the two home sea frontiers.²⁷

In answer to an urgent request from the commander of the Gulf Sea Frontier for air reinforcement, a detachment of twenty B-18's was sent south; and shortly thereafter, on 26 May, Maj. Gen. Follett Bradley, commanding general of the First Air Force, set up the Gulf Task Force of the I Bomber Command. This new organization was composed initially of the detachment of B-18's mentioned above, together with two observation squadrons (the 97th and 66th) and all units of the Civil Air Patrol then engaged in antisubmarine patrol in the Gulf Sea Frontier. Its headquarters, temporarily located at Charleston, South Carolina, was ultimately established at Miami, Florida. The command relationship between the Gulf Task Force and the Gulf Sea Frontier was similar to that which existed between the I Bomber Command and the Eastern Sea Frontier.²⁸

It soon became evident that the need for Army air patrol in the Gulf area exceeded the ability of this small task force to meet it. Accordingly, a few days after it had been established, General Arnold requested the Third Air Force to use certain of its training units for antisubmarine patrol in the course of their regular overwater training missions, such flights to be directed by the Gulf Task Force. For its part, Third Air Force, various units of which had maintained sporadic patrols of the Florida and Gulf areas since December 1941, proposed to place eight B-17's, operating from Barksdale Field, Louisiana, and

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MacDill Field, Florida, at the disposal of the Gulf Task Force. A plan embodying these recommendations was put into effect on 1 July 1942. In addition, two observation groups (the 128th and the 124th) were attached to the Gulf Task Force in early July primarily for the purpose of forming and training Civil Air Patrol groups in the Gulf area. Meanwhile, arrangements had been made to establish a joint operations center at Miami, to be built on the general pattern being evolved for similar purposes in New York City. The project was initiated in June. By September, the I Bomber Command was operating from ten bases scattered along the coast line from Westover Field, Massachusetts, to Galveston, Texas.²⁹

During April, May, and June of 1942, I Bomber Command planes, and those serving under the operational direction of that command, attacked enemy submarines at a steadily increasing rate. Although hours flown during this period showed a slight decrease in monthly total from the record activity registered in March, the number of attacks for the three-month period turned out to be almost seven times greater than for the first three months of the year. And of the fifty-four attacks recorded, at least seven appear to have resulted in some damage to the enemy craft. As yet, however, no attack had resulted in the destruction of a U-boat. Nonetheless, the total harassing effect seems to have been considerable, as is suggested by the enemy's tendency to shift the attack to the areas less effectively covered by air patrol.³⁰

More promising was the tactical experience gained in the course of those first six months of continuous operations. It was necessarily a period of training and experimentation, and the later effectiveness of the Army antisubmarine campaign depended to a large extent on the experience gained from January to July of 1942. Fortunately, both Army and Navy antisubmarine forces were able to draw largely on the experience of the British for their initial stock of tactical data, and they made extensive use of their opportunity. Of particular aid to the AAF units was the help given by two liaison officers sent to the United States in February.³¹

Study of British intelligence data indicated that, prior to August 1941, British aircraft had executed 270 attacks on U-boats, as a result of which two U-boats had been definitely sunk and five more probably sunk. On the basis of this experience, not wholly encouraging in the sum total, British analysts had been able to arrive at certain very

important tactical conclusions. For example, they determined that the probability of a successful attack on a long-submerged submarine was extremely small. Conversely, only U-boats which could be attacked while on the surface or within, at most, thirty seconds after submerging offered profitable targets, a fact which encouraged the use of depth bombs set for detonation at relatively shallow depths, say twenty-five to thirty feet. British experience also indicated that, to insure a successful attack, one of the bombs dropped must explode within little more than a dozen feet of the U-boat's hull.³²

Such items of tactical information the American units welcomed and found very valuable. But much of the job of hunting U-boats had necessarily to be learned by doing. Consequently, during these early months of the campaign, each AAF unit operated for tactical purposes in large part as its commander saw fit; and the data on each attack were eagerly studied in I Bomber Command headquarters with a view to the evolution of a tactical doctrine of its own. Many of the lessons were elementary. It was found to be well, for instance, not to pay too much attention to the appearance of oil slicks on the surface of the water, as they did not indicate necessarily the presence of a submarine. From the air, too, it was easy to mistake the wake left by the fin of a shark for that produced by the periscope of a submarine, a fact from which the larger forms of marine life may on more than one occasion have suffered.³³

Many other lessons involved increasingly subtle understanding of the conditions under which attacks might be undertaken with the greatest chance of success—the use, for example, of cloud cover as a means of concealment and surprise in daytime attacks, and an approach toward the target down the moon path by night. If a submarine submerged before an attack could be delivered, it was found to be advisable for the attacking plane to use “baiting” tactics, which involved leaving the area for a good interval and then returning to it in the hope that the enemy might in the meantime have surfaced and be thus open to another attack. In many other respects the learning process was far from complete by July of 1942. Opinion still differed as to the advisability of dropping an entire bomb load on the initial contact; and it was still debated whether it was better to attack the U-boat from the side or along its longitudinal axis. But the data was beginning to arrive in quantity sufficient soon to remove such questions from the realm of opinion. Finally, the development of

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radar had opened up an entirely new field for investigation in anti-submarine tactics, though as yet little had been done in this country along that line and only a few Army aircraft were specially equipped.³⁴

Generally speaking, Army antisubmarine operations fell into three broad categories: routine patrol of areas in which the threat of enemy action existed, special patrol of an area in which a particular U-boat was known to be lurking (a process known sometimes as a "killer hunt" and carried out often in conjunction with naval air and surface forces), and cover for convoys sailing within range of land-based aircraft. The first two of these activities, involving as they did an attempt to search out and attack the enemy, constituted the offensive phase of the campaign. The last, consisting of the direct protection of shipping, was primarily defensive in character, although it was recognized that the vicinity of a convoy was a likely place for U-boats to be found.³⁵ It was not, however, until after 15 May 1942 that the Army units were called upon for regular convoy cover, for it was not until that date that the Navy felt able, in terms of escort vessels and aircraft, to inaugurate a convoy system for coastal shipping.³⁶ Beginning in May, I Bomber Command aircraft were requested by the sea frontier commanders to take part in the protection of convoys from Key West to the Chesapeake Bay, and during the summer steps were taken to extend protection to the oil and bauxite shipping in the Caribbean. The Navy was able to assume a large share of this convoy air cover. By the end of May, it was employing long-range PBY-type aircraft with an endurance of fifteen hours over the most distant convoy routes.³⁷ Nevertheless, convoy protection was already competing strongly for the services of AAF antisubmarine units.

Six months of experience in U-boat hunting began to bear fruit during July, August, and September in a noticeably higher level of success in the attacks made by units operating under I Bomber Command control. Although the number of attacks fell off rapidly after the high record of June, the proportion of those considered damaging to the submarine increased remarkably. Whereas during the previous three months only seven of the fifty-four attacks were thus assessed, during July, August, and September eight out of twenty-four attacks were believed to have damaged the enemy craft, and one, executed on 7 July, resulted in a sure "kill."³⁸

Still more interesting is the fact that the frequency of attacks made

by Army aircraft shows a rough correlation with the density of U-boats in the coastal waters and with the rate of merchant vessel sinkings. Since May the Germans had shifted the weight of their effort steadily southward until, by September 1942, they had virtually abandoned the Eastern and Gulf Sea frontiers. After 4 September, no sinkings occurred in those waters as a result of enemy submarine action during the remainder of the year. June 1942 had witnessed the pattern of sinkings moving toward the Gulf and Caribbean areas. By August, the Gulf was practically free of sinkings, which by that time were heavily concentrated around Cuba and in the waters off Trinidad. By September, the enemy had given up attacks around Cuba, Haiti, and Puerto Rico but continued in the Trinidad area, where since February of 1942 a group of submarines had been consistently successful in the vulnerable oil and bauxite shipping lanes.³⁹

This gradual withdrawal of the enemy reflects the steady increase in both the weight and quality of the American antisubmarine effort. That effort involved the operation of Navy and Army units, of surface and air craft, and it would be futile to try to evaluate precisely the relative importance of any one factor. The coastwise convoy system, which the Navy was able to inaugurate in May, made it possible for shipping to move in the American waters with greater security, and it thereby did much to reduce the margin of profit the U-boat command might expect from its activity in the western Atlantic. But it is also true that this margin of profit was cut drastically by the extension and increasing effectiveness of air patrol. In the eastern Atlantic, the U-boat captains had demonstrated their unwillingness to operate in areas systematically covered by aircraft, and it appears that they continued to follow this policy in the western Atlantic as well. Their decision, to be sure, did not result directly from the damage sustained from attacks by American aircraft. In the course of 59,248 operational hours flown between January and October 1942, the I Bomber Command reported not many more than 200 sightings, in only eighty-one of which instances did attacks of any sort ensue. These attacks resulted in the destruction of one U-boat, the probably serious damage of six, and the less serious damage of seven more. Attacks by naval aircraft occurred with increasing frequency, amounting in all to well over half the total made by aircraft during the period and in the area under review. But it is still doubtful whether the total weight of air attack proved decisively

damaging to the U-boat fleet.⁴⁰ Rather, aircraft made their contribution by forcing the enemy to submerge so frequently and to stay down for such long intervals that their targets disappeared and their activity became handicapped to the point where the returns barely justified the expense.

According to postwar statements by Admiral Doenitz, the balance sheet of profit and loss for activity in the western Atlantic favored the submarine for a longer period than the U-boat command had anticipated. The success of the first U-boats in American waters had been, as expected, very considerable. American defenders were inexperienced, whereas U-boat commanders had behind them more than two years of operations. Every available submarine had, therefore, been sent into the American zone. But it had been expected that the resulting successes would soon fall off, and it was a matter of some surprise to the Germans that until the end of September 1942 their efforts remained profitable despite the long inoperative passage out and back and despite the fact that the rapidly stiffening defenses off the northeast coast had long since forced the U-boats to look farther south for easy and economical victories.⁴¹

Although driven from the home waters, and to a possibly decisive extent by air power (Admiral Doenitz tells us that air reconnaissance and attack was the antisubmarine measure most feared by the U-boat command), the enemy had by no means been defeated. He had merely concentrated his efforts in other areas—and so effectively that in November 1942, two months after he had virtually abandoned the American home waters, he destroyed more Allied and neutral shipping than in any month since June.⁴²

While I Bomber Command was helping to drive the U-boats from the home waters, and in the process was becoming an organization especially trained and equipped for antisubmarine warfare, other AAF units were also actively engaged against enemy submarines in other parts of the western Atlantic. A few Army B-17's, seldom more than a squadron, continued during 1942 to supplement the Navy's air arm in the Newfoundland area.⁴³ But it was in the Caribbean that the Army units saw their most intensive and continuous action. Units of the Caribbean Air Force, organized on 1 March 1942 into the Antilles Air Task Force in compliance with an order from the parent organization dated 16 February, devoted almost their entire effort for the remainder of the year to antisubmarine operations

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in support of the naval forces of the Caribbean Sea Frontier, from which headquarters they received their operational direction.⁴⁴

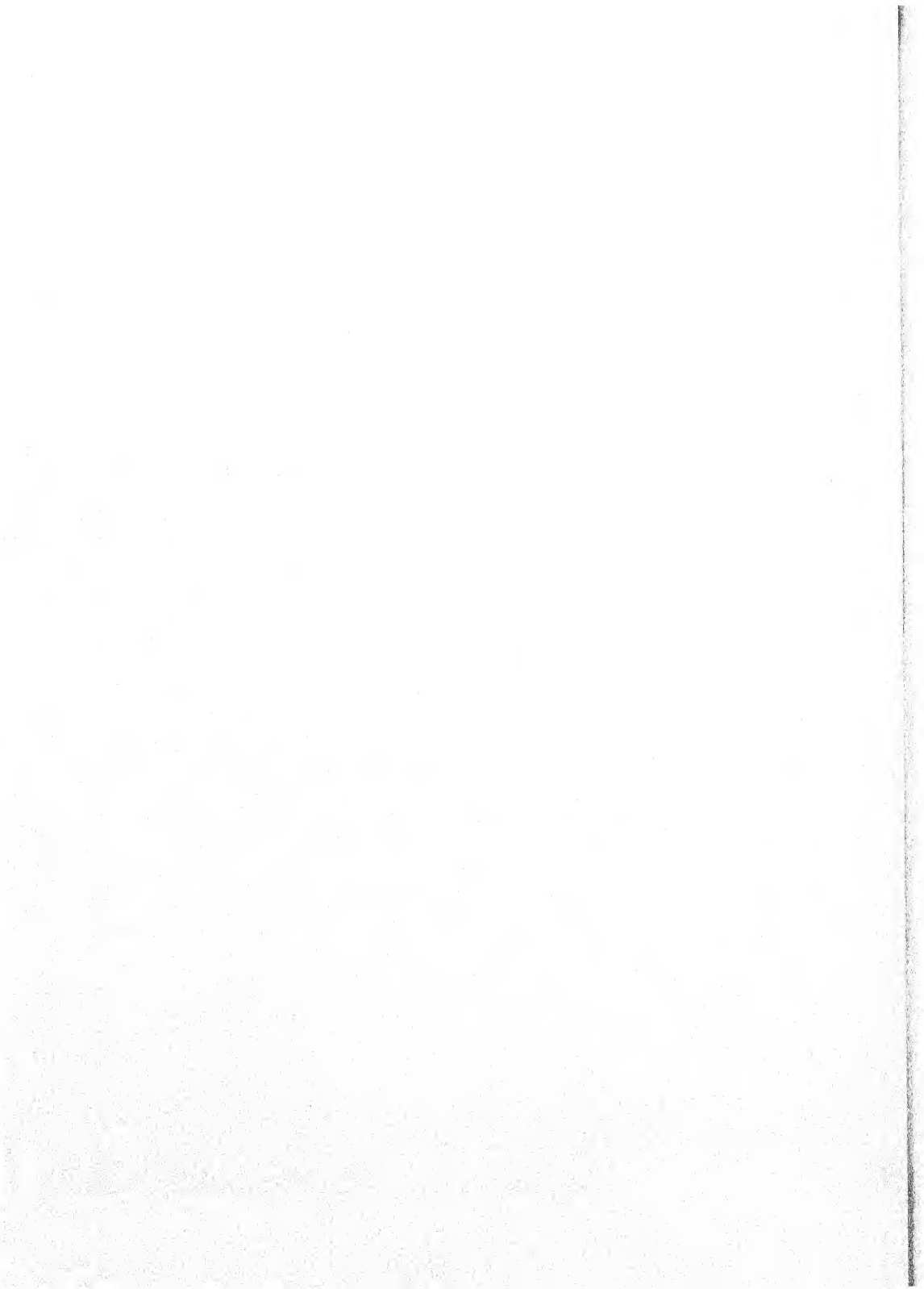
The U-boats had made their presence felt in the Caribbean on 16 February. Attacking with impunity, they sank several tankers off Aruba on that date and even shelled an oil refinery on the island itself.⁴⁵ By the end of September 1942, they had sunk 173 merchant vessels in the western area of the Caribbean Sea Frontier. Shipping losses reached their peak in August, with a total of thirty-three sinkings in that area.⁴⁶ The Caribbean, which offered an especially valuable opportunity in the oil and bauxite traffic between the Curaçao-Aruba-Trinidad area and the continental United States, had thus become a favorite hunting ground for the enemy raiders.

The forces available to the commander of the Caribbean Sea Frontier, including those of the Antilles Air Task Force, were admittedly insufficient during the early months of 1942 to provide effective defense. Army bombardment forces available in February 1942 included not more than forty operational B-18's in the medium bomber class, plus about seven light bombers of the A-20 type. They included no long-range planes at all. These meager bombardment forces, together with a few pursuit squadrons, were scattered about the Caribbean in Trinidad, Curaçao, Aruba, St. Lucia, Surinam, British Guiana, Puerto Rico, St. Croix, and Antigua. By the end of the summer, the task force could count on few if any more bombers than it had reported in February, although its strength in fighters had more than doubled.⁴⁷ The U.S. Navy meantime, however, had materially increased the scope and effectiveness of its effort in the Caribbean, and although the Antilles Air Task Force had remained in strength substantially as before, its units had acquired valuable experience since February. Whereas prior to July they had executed very few attacks, in July and August they reported more than a score.⁴⁸ During the fall of 1942, the U-boat command sharply reduced its activity in the Caribbean to concentrate its attention on the North Atlantic convoy area and the approaches to Northwest Africa.

Despite its almost exclusive preoccupation theretofore with submarine warfare, the Antilles Air Task Force remained at the end of 1942 officially a striking force whose primary function was to guard against possible attack on the Panama Canal. The prolonged presence



A B-18 ON PATROL IN THE CARIBBEAN



of a French aircraft carrier at Martinique continued to lend an air of immediacy to the threat which originally had determined this mission, and it was doubtless for this reason that the Antilles Air Task Force never evolved, as did I Bomber Command, into an organization shaped for the primary purpose of antisubmarine warfare. Indeed, by the fall of 1942 plans were under way for extending the activity of I Bomber Command, in its as yet unofficial capacity as the AAF antisubmarine force, to bases in the Caribbean; and in August, a few B-18's of its 40th Bombardment Squadron had been in fact sent on detached service to the Puerto Rican and Trinidad areas. This experiment in sending antisubmarine forces to outlying bases on a detached service status proved administratively unsatisfactory, but plans nevertheless continued to point toward I Bomber Command as the organization that would be responsible for AAF specialized antisubmarine activity wherever it might be undertaken.⁴⁹

When on 15 October 1942 the I Bomber Command became the Army Air Forces Antisubmarine Command with a materially expanded mission, it was still a comparatively small organization and one as yet inadequately trained and equipped for its task. From a high point of 216 planes in July, a point reached just after the submarine menace within the area of its operations had begun to decline, the I Bomber Command had suffered a decrease in combat strength until in October it reported only 148 aircraft. Of these, twelve were B-17's, fourteen B-18's, thirty-five B-25's, and three B-24's; the rest, a mixture of A-20's, A-29's, and B-34's, lacked sufficient range for anything except strictly coastal patrol. Some twenty-seven planes were at this time equipped with radar; this number, too, represented a marked decline since July. But the command had made great progress toward becoming an effective antisubmarine striking force. It had accumulated the many benefits of a wide and varied experience, and its personnel stood ready to provide effective leadership in the definition of tactical doctrine, the shaping of training, and the adaptation of equipment to the peculiar requirements of a larger mission. It had come to be recognized that the long-range B-24 was especially well suited to the demands of antisubmarine warfare, and in September the command had received the first of the planes that would thereafter become the principal reliance in the AAF's antisubmarine effort.⁵⁰

Genesis of the Army Air Forces Antisubmarine Command

Meanwhile, the American high command was struggling with the more fundamental problems of antisubmarine policy. As has already been noted in this volume and will be noticed repeatedly hereafter, the question of shipping proved again and again the most crucial of those faced in attempts to meet the demands of our hard pressed forces in the Pacific and to provide for an early assumption of the offensive against Germany. And so threatening to the basic strategy agreed upon for the conduct of the war was the submarine attack that no possibility of taking effective action against it could be overlooked.

Two things the submarine crisis had immediately made clear: an effective antisubmarine campaign would require more aircraft than could be supplied from current production designed for Navy use, especially in view of the many demands on naval air strength; and a large proportion of the necessary aircraft would have to consist of land-based types, admittedly better suited, because of their speed, range, and firepower, for antisubmarine attack than the seaplane.* It was soon evident, too, that these requirements could be met either by turning over to the Navy a force of Army land-based bombers sufficient to allow that service to accomplish the task by itself, or by setting up a separate command within the AAF to be specially trained and equipped for antisubmarine warfare and with that as its sole duty. Thus the AAF units engaged in the anti-U-boat war became almost at once the subject of a jurisdictional controversy.

The issue first arose in acute form when the Navy acted early in 1942 to secure a force of land-based bombers for its own use. On 15 January, the Air Staff had under consideration a request from Rear Adm. John H. Towers, chief of the Bureau of Aeronautics, for the transfer to the Navy from future production of Army-type

* On 5 March 1942, Admiral King wrote to General Arnold as follows: "The experience of the last two winters has demonstrated that naval aviation missions such as convoy escort, observation, scouting and patrolling over the sea, and the protection of shipping in the coastal zones, cannot be accomplished by seaplanes based on ice-bound bases in the North Atlantic and Pacific areas. In addition to this experience, a study of the purely naval operations of the Coastal Command of the Royal Air Force has led to the conviction that for such missions, carried out from prepared fixed bases, multi-engined landplanes have certain characteristic advantages in increased range, ease of maintenance, and facility of operation, over seaplanes." The Navy's carrier-based planes which lent important weight to the antisubmarine war in its later phase were not employed in the Atlantic until March 1943.

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planes of approximately 200 B-24's and 900 B-25's and B-26's.⁵¹ A formal request by Admiral King to the Chief of the Army Air Forces on 14 February sought provision for the transfer of a total of 400 B-24's and 900 B-25's, and expressed the hope that by allocation from current production it might be possible to meet requirements for 200 B-24's and 400 B-25's prior to 1 July 1943.⁵² It was argued by Admiral Towers in support of the Navy's claim that arbitrary limitations as to type of aircraft or weapon employed should not be allowed to restrict the effectiveness of either AAF or naval aviation. He further argued, citing the Army's need for dive bombers which was currently being met in part by a Navy-developed type, the mutual advantage of an exchange of equipment.⁵³ To General Arnold's headquarters, however, the problem assumed a quite different aspect. Preoccupied with the difficult task of meeting urgent defensive requirements in all theaters and at the same time of building up a bombardment force with which to carry the air war into the heart of Germany, that headquarters viewed the proposed diversion of 1,300 bombers with dismay. Estimated total deliveries of the B-24 type to June 1942 amounted only to 230 aircraft. Estimated deliveries of all heavy bombers for the calendar year 1942 were no more than would be required for the equipment of thirty-four heavy groups set up without provision for depot reserve. As for the medium bombers, it was anticipated that without further diversion the Army Air Forces would suffer a shortage of 850 airplanes.⁵⁴ The AAF's first reaction was, therefore, expressed in the following unequivocal terms: "There are no heavy or medium bombers available for diversion to the Navy."⁵⁵

At the same time, Arnold and his staff faced a serious dilemma. On the one hand, they felt committed to the task of mounting the strategic bombardment offensive against Germany, a task which already had been made tentatively a vital part of the combined Anglo-American strategy and in which the Air Staff had great faith. On the other hand, the German submarine attack, if not in some measure countered, could quite conceivably prevent the build-up in the United Kingdom for the bomber offensive—indeed, it could, and was, endangering the entire Anglo-American war effort. There was consequently no question but that Army bombers would have to be employed in antisubmarine operations. If they could not be provided in the numbers requested by the Navy for antisubmarine and other

activities, they would have to be provided for the purpose of countering the U-boat threat in whatever quantity considered feasible in the light of other commitments.

Such being the case, the Air Staff preferred to retain possession of the antisubmarine bomber forces to be made available and to employ them in accordance with the Army responsibility set forth in Joint Action for operations "in support of or in lieu of naval forces." In that way, it was felt, a serious duplication of equipment, maintenance, and supply would be avoided, which otherwise would eventually "deny the essential difference between armies and navies."⁵⁶ The question of duplication was all the more serious because it was evident that the bombers requested were not to be employed exclusively for antisubmarine operations in the Atlantic.⁵⁷ In other words, the implications of the proposed transfer were far reaching in their effect on the fundamental question of control of land-based aviation engaged in seaward operations.⁵⁸

General Arnold proposed, therefore, as a solution of the problem of providing additional forces for antisubmarine warfare a compromise which would retain the principle of ultimate responsibility as set forth in Joint Action and which enjoyed the support of precedent. In a letter of 9 March 1942 to Admiral King, he proposed "the establishment of a Coastal Command, within the Army Air Corps, which will have for its purpose operations similar to the Coastal Command, Royal Air Force," operating "when necessary" under the control of proper naval authorities. The advantages of such an organization, he felt, would be compelling. It would be uniquely trained and equipped for the job. It would also possess the flexibility necessary for anti-submarine action, and could readily be reduced in strength as the need decreased, the units then simply reverting to normal bombardment duty without becoming stranded wastefully in a naval program which presumably would then have no place for them.⁵⁹ This proposal of General Arnold's sounded the keynote for AAF policy in the negotiations which culminated in the creation of the AAF Anti-submarine Command.

It also reflected the profound influence exerted by the RAF Coastal Command on AAF thinking. That the Coastal Command should provide something of a blueprint for a similar organization in the United States was very natural, for it had pioneered in anti-submarine warfare under circumstances roughly analogous to those

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in which the American forces found themselves fighting in 1942. The British had solved the problem of co-ordinating the activities of land-based aviation with those of the Royal Navy and the Fleet Air Arm by creating a special RAF command, equipped and trained for sea search and attack and placed for purposes of operational control under the Admiralty. Details of this arrangement had been made available to interested headquarters in Washington by the British officers detailed to advise the American antisubmarine forces. Admittedly far from perfect, the system they described bore the authority of more than two years' experience in joint action, experience marked by close and effective co-operation between the services. The Admiralty set forth the general pattern of antisubmarine operations and left it to Coastal Command to direct the activities of its own units within that over-all strategic pattern. Sea and air officers in charge of operations worked in the same quarters from identical intelligence data presented on the same plotting charts. Interchange of information thus became virtually automatic.*⁶⁰

No immediate results followed General Arnold's proposal. By May, however, the submarine situation itself pointed more imperatively than words to the need for some change in the existing system of control. Most of the May sinkings had occurred in the Gulf and Caribbean areas. Scarcely adequate to protect shipping in the Eastern Sea Frontier, the existing organization of antisubmarine operations proved powerless to cope with a greatly extended area of activity. Above all, there was the ugly fact that during that month sinkings in both these sea frontiers had risen to an alarming figure. Despite energetic efforts on the part of both Navy and AAF agencies to meet a rapidly changing situation with machinery constructed essentially on static principles, the extension of AAF antisubmarine operations merely emphasized the faults inherent in the existing system of command and control.

The agreement reached late in March had placed unity of command over all air forces operating over the sea in the coastal defense areas in the hands of the sea frontier commanders. This seemed a convenient enough arrangement for the time being, but in reality it merely made more definite what had hitherto been left vague. It did

* The contrast between this concept of operational control and that followed by the U.S. Navy should be noted. The U.S. Navy preferred to exercise more detailed supervision of the operations of Army units assigned to its control through such lower echelons of command as the sea frontier and the naval district.

nothing to meet the problem of deploying land-based aviation effectively in antisubmarine warfare. The trouble was that no single command, either in the Navy or Army, was solely responsible for the conduct of the antisubmarine war. The result was that a multiplicity of regional headquarters within a system constructed originally to meet the needs of a static defense robbed the air arm of what the AAF considered its primary advantage, namely its mobility as an offensive striking force.

Most AAF units engaged in the campaign served under the operational control of the I Bomber Command, which remained the only organization capable of co-ordinating such an enterprise. But the I Bomber Command was still theoretically a bombardment force, and as long as it retained a dual responsibility its training and tactical development had literally to be carried on at two levels—for high-level bombardment and for low-level attack against submarines. This situation prevented it from concentrating as fully on the anti-U-boat war as the nature of that conflict required. The system over which it presided was, moreover, loosely integrated. The Civil Air Patrol served under the I Air Support Command for operational control. I Air Support Command, in turn, operated under the control of I Bomber Command. Units of the Third Air Force, brought in as an emergency measure to meet the crisis in the Gulf area in May, operated under the control of the Gulf Task Force of the I Bomber Command. And this system, such as it was, as yet did not extend to the Caribbean, where the Antilles Air Task Force operated independently under the Caribbean Sea Frontier. Administratively speaking, the situation was even more complicated because all units were administered through either the First Air Force or the Third Air Force, both of which had to go through their respective defense command headquarters before reaching Headquarters, AAF.⁶¹ Within the Army itself, then, the organization was poorly adapted to meet the challenge of an opponent that operated with extreme mobility under a strictly unified command.

Another serious difficulty arose from the fact that the AAF units were, according to joint agreement, allocated to the sea frontier commanders. These allocations were treated by the Navy as more or less permanent arrangements which, except in grave emergency, would prevent the AAF units serving under one frontier commander from operating in the territory of another. This tendency to tie

WESTERN ATLANTIC DEFENSE AREAS AS OF 1 AUGUST 1942



down the antisubmarine aviation to regional commands fortunately did not extend to the naval districts, for if the practice had been followed there it would have vitiated the effectiveness of the air arm. Mobility, on which this effectiveness was considered to depend, was nevertheless seriously obstructed by the difficulty of moving aircraft assigned to one sea frontier to meet sudden requirements in an area under the jurisdiction of another.⁶² Although a function of COMINCH, the antisubmarine campaign in the western Atlantic remained in practice a decentralized effort, its flexibility, especially in the deployment of land-based aircraft, and its integration of tactical procedure seriously compromised by a rigid system of regional control.⁶³

A centralized command thus became the key to AAF thinking as far as it concerned the participation of Army air units in the antisubmarine war. That campaign needed other things, to be sure. It needed better equipment, a better training program, a better communications system. Above all, AAF observers felt it needed a truly mobile air arm. But all of these requirements depended in one way or another on the attainment of a more unified command. Opinion, however, in AAF quarters was not quite unanimous as to the nature and extent of this unified jurisdiction. Obviously the entire American antisubmarine campaign, involving surface as well as air forces, would profit by centralized control if any part thereof would. And, if operational control by the Navy were to continue, as seemed likely, then it would be well for a single Navy commander, rather than several, to exercise that control over AAF units. But many AAF observers, apprehensive of the direction in which a unified naval command would lead the air forces allocated to it, preferred to think in terms of a unified command for antisubmarine aviation as a matter of primary importance, assuming, no doubt, that such an air command would be capable of answering the needs of the air arm even under the over-all control of the Navy. Some felt that this command should consist only of land-based units; others argued that it should also include Navy and Marine heavier-than-air craft engaged in the antisubmarine campaign. All agreed, however, that the successful participation of the AAF in the Battle of the Atlantic depended on the creation of a separate command, comprising at least the AAF units, responsible directly to Headquarters, AAF, and trained and equipped for the sole purpose of hunting U-boats.⁶⁴

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What gave particular point to these arguments was the radical divergence in strategic policy existing between the AAF and the Navy with regard to the employment of land-based antisubmarine aviation. That difference in concept helps explain both why the AAF was concerned to create an antisubmarine coastal command of its own, and why it hoped to secure an interpretation of the Navy's operational control in terms comparable to those governing RAF Coastal Command. Almost from the beginning, the question had arisen whether aircraft of the AAF should be employed defensively, that is, primarily for the protection of convoys, or as a mobile striking force capable of carrying the battle to the enemy wherever he might be hunting.

Naval doctrine emphasized the basically defensive functions of convoy escort and the patrol of more or less fixed sectors of the coastal waters. In June, Admiral King expressed the official Navy position on this point with the utmost clarity in a letter to General Marshall dated the 21st: "I might say in this connection that escort is not just *one* way of handling the submarine menace; it is the only way that gives any promise of success. . . . We must get every ship that sails the seas under constant close protection."⁶⁵ AAF students of the problem expressed an equally marked preference for the offensive. Defensive measures, they maintained, while essential to the immediate task of protecting shipping and for that reason deserving a high priority, could never dispose of the U-boat menace but must be supplemented by a vigorous offensive campaign in which the strategic movement of the submarine fleet could be promptly countered by a corresponding shift in the weight of air attack. Admittedly, the airplane as it was equipped in the summer of 1942 lacked the killing power necessary to destroy many submarines. But it was improving; and in the meantime, it possessed great searching power by means of which it could render an area unprofitable for the enemy to work. Whenever a sinking occurred or the presence of a submarine was detected, long-range planes should be sent to the spot for intensive search, a policy which required a highly mobile force.⁶⁶ Here again RAF Coastal Command lent the support of its experience. Air Marshal P.B. Joubert, when asked in August 1942 for a statement of the principles upon which his command operated and to which it owed its success, replied in part that "while a certain amount of close escort of convoys, particularly when threatened, is a necessary feature

of air operations, the main method of defeating the U-boat is to seek and strike." He continued, "The greater portion of the air available should always be engaged in the direct attack of U-boats and the smallest possible number in direct protection of shipping," for it had been the experience of the RAF "that a purely defensive policy only leads to heavy loss in merchant shipping."⁶⁷

With the need for reform in the antisubmarine campaign in mind, and impelled by the desperate shipping situation, the War Department in May 1942 demanded action. On the 20th of that month, the Assistant Chief of Staff, Operations Division, directed the commanding generals of the AAF and the Eastern Defense Command to take necessary steps to improve the antisubmarine activity being undertaken under the First Air Force and the I Bomber Command. In addition to indicating certain physical reforms, he requested General Arnold to reorganize the I Bomber Command in such a way as to "fulfill the special requirements of antisubmarine and allied air operations, in consonance with the Army responsibility in operating in support of, or in lieu of naval forces for protection of shipping."⁶⁸ By taking this action, the War Department recognized that the participation of its air arm in the war against the U-boat was no longer merely an emergency measure, but one likely to continue as long as the submarine menace lasted. And in doing so it found itself in a strong position. The AAF possessed vitally needed weapons and had already taken part in antisubmarine operations for nearly five months, during which time it had laid the ground work for an effective organization, had developed special techniques, and had prepared plans for a more ambitious effort.

The directive of 20 May stated further that, although unity of command was vested in the Navy, the Army must be prepared to submit recommendations and to take every action to make anti-submarine warfare fully effective. Accordingly, plans of a more or less specific nature soon appeared, plans embodying both the jurisdictional and the strategic policy of the AAF, sometimes in their more extreme forms.⁶⁹ Official action, however, took a much slower course, dictated by the immediate, practical need for a compromise settlement which would recognize the primary interests of both services.

In a memorandum to Admiral King, General McNarney, Deputy Chief of Staff, on 26 May outlined the War Department plan for reorganizing its antisubmarine program. The I Bomber Command

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was to be organized as a unit for antisubmarine "and related operations" on the East and Gulf coasts. Air bases were to be established at strategic locations in order to take maximum advantage of the mobility of land-based aircraft. As soon as available, ASV-equipped aircraft would be welded into units "particularly suited for hunting down and destroying enemy submarines by methods developed by our experimental units which have been operating off Cape Hatteras." Mobility was to be the keynote of this reorganized force. When a unit moved to an area outside the Eastern Defense Command, it would operate under the control of the particular sea frontier commander concerned, but it would still remain assigned to the I Bomber Command. Movement to and operation in areas beyond the jurisdiction of the parent organization would be viewed as a temporary detachment.⁷⁰

Admiral King's reaction to these cautious proposals was expressed with equal caution. While approving in general of the plan, he made it clear that he intended to make no radical change in the existing system of operational control vested in the sea frontier commanders. It would be necessary for the commander of the Eastern Sea Frontier, who was responsible for the protection of shipping in both the Eastern and Gulf Sea frontiers, to request air coverage for convoys operating outside the Eastern Sea Frontier from the commander of the Gulf Sea Frontier. This arrangement, he explained, did not present any administrative difficulty. It would mean only that aircraft attached to one sea frontier would not be required to operate in another sea frontier "unless exceptional conditions make it necessary." In a note to the sea frontier commanders concerning General McNarney's proposal, he further clarified his policy by stating that the division of aircraft, both Army and Navy, as between the sea frontiers, would be a matter under the cognizance of his headquarters.⁷¹

While these discussions continued with little promise of radical reorganization in the program as a whole, shipping losses continued to occur at an appalling rate. On 19 June, General Marshall expressed his fear that "another month or two" of similar losses would "so cripple our means of transport that we will be unable to bring sufficient men and planes against the enemy in critical theaters to exercise a determining influence on the war."⁷² This note of alarm elicited from Admiral King an energetic defense of the system of convoy and an equally positive criticism of the AAF doctrine of an air offensive

against the U-boat at sea. Patrol and hunting operations had time and again proved futile, he asserted. The "killer" system, whereby contact with a submarine is followed continuously and relentlessly, required more vessels and planes than were available. The only way he believed it possible to eliminate the U-boat menace was to wipe out the German building yards and bases—"a matter which I have been pressing with the British, so far with only moderate success." * But even this form of offensive strategy would do little more toward making the Atlantic safe for Allied shipping than a complete system of convoy cover and escort could achieve.⁷³

He therefore proposed extending and intensifying the convoy system as the most effective step toward reducing the submarine menace. Specifically, he urged the Army to make available as air cover for escorted convoys a total of 500 planes, 200 of which should be deployed in the Caribbean and Panama Sea frontiers, where the convoy system was being extended in order to protect the vital oil and bauxite shipping from South America. These 500 planes, he felt, were a bare minimum, but they would effectively supplement the total of 550 patrol and 300 observation planes the Navy hoped to employ in the four western Atlantic sea frontiers.⁷⁴

On 7 July 1942, in a memorandum to the Secretary of the Navy, the Secretary of War reopened the question of antisubmarine organization with a fresh proposal. He called attention to the increasing rate of shipping losses and to the current antisubmarine effort which, he said, had proved "largely ineffective." The trouble, he continued, lay primarily in an inefficient system of command and control with regard to ASV-equipped aircraft:

Authority and responsibility is at present divided between many commands and echelons of command. The flow of communications through so many channels inevitably consumes time and effort and interferes with the most effective employment of the forces available. Centralized control to enable the instant concentration of available forces at points of major threat is required. This situation has assumed such a critical aspect that drastic measures should be taken immediately.⁷⁵

In order, therefore, to provide a greater degree of flexibility "than appears to exist under the Naval District system and our Eastern Defense Command set-up," and to take advantage of the mobility of

* It may be noted in this connection that from October 1942 until June 1943 the Eighth Air Force had as its objective of highest priority the bombing of German submarine shore facilities.

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aircraft, he suggested that a single sea frontier command be established, extending from Maine to Mexico and covering the Atlantic and Gulf areas, with a naval officer in charge of it. The specialized anti-submarine command then being developed by the Army Air Forces would be placed under the operational control of that naval officer. To this proposal, Secretary of the Navy Frank Knox replied in much the same words as used by Admiral King a month earlier: the answer to the antisubmarine problem lay "in augmenting our forces rather than in further changes in the system of command which now seems to be working effectively."⁷⁶ In reply, Secretary Stimson stated that the War Department was planning to provide for antisubmarine operations all reinforcements "that can be diverted from other tasks." Specifically, 175 ASV-equipped bombers were to be furnished I Bomber Command, and it was felt that this force would be adequate if freed from restrictions "which are inherent in inflexible command systems based upon area responsibility."⁷⁷

It was along these lines, the employment of radar-equipped, land-based bombers within a flexible system of command, that Dr. Edward L. Bowles, expert consultant to the Secretary of War, had been working for some time. He urged in August that the antisubmarine campaign be revitalized by extending the use of scientific aids. Specifically, he urged that radar and related devices be developed with all possible speed and that the possibilities in long-range, land-based antisubmarine aviation be realized by the employment of radar-equipped B-24's in substantial numbers. This revitalized force should then be used in a co-ordinated offensive calculated to destroy the enemy, not simply to protect shipping.⁷⁸

The AAF, through the initiative of Dr. Bowles and certain air officers, had already taken an important step in this direction. Hunting submarines had proved a highly specialized undertaking, unlike anything else the AAF had encountered. The attack itself involved a curious duel between plane and submarine, each capable of three-dimensional maneuver within the limitations of its peculiar medium. But the most frustrating aspect of antisubmarine warfare for the

* Secretary Knox replied that, since the existing system of sea frontier areas had been designed for use in all operations which might have to be conducted in or from them, whether antisubmarine or otherwise, it would be a more flexible arrangement to allocate fighting units to the several sea frontier forces than to "freeze" them in an organization (such as the proposed antisubmarine command) designed for only one purpose. (Memo for Stimson from Knox, 14 Aug. 1942.)

aircrews was the search, the effort to locate an almost invisible object in the vast stretches of the ocean. It often seemed like trying to find the proverbial needle in a stack of hay, and as a matter of fact it was possible for crews to spend hundreds of flying hours with barely a sighting to show for the effort. It was, therefore, natural that radar should become the greatest of all antisubmarine weapons. The German submarines would not feel the full effect of this aid until 1943, but its potentialities were initially explored during 1942.

As shipping losses mounted in the spring of that year, it had become clear that to defeat the U-boat an expanded antisubmarine force would not in itself be sufficient. Accordingly, on 30 May 1942, General Arnold ordered his director of Technical Services to establish the Sea-Search Attack Development Unit (SADU) with headquarters at Langley Field. This organization was to concern itself primarily with the development of tactics and techniques of antisubmarine warfare, making use of all special devices available or under development. It was also to serve as an experimental group, testing and demonstrating devices which might be submitted to it for consideration, and as an agency for training crews in antisubmarine tactics. In the course of this work of research, testing, and training, or in addition to it if need be, the unit was to participate directly in the destruction of submarines. SADU was further directed to establish and maintain the closest possible liaison with "all other centers of research and development relating to the elements, systems and tactics" of antisubmarine warfare.⁷⁹ In order to free it from the encumbrance of complicated command channels, the Commanding General, AAF, assumed command of the new unit through his director of Technical Services. Operationally, however, it came under the control of I Bomber Command. It was activated on 8 June 1942. In addition to Headquarters, 1st Sea-Search Attack Group, it was assigned a tactical unit, the 2d Sea-Search Attack Squadron, which eventually operated some ten ASV-equipped B-18's. In December 1942, the 3d Sea-Search Attack Squadron was activated in order to test and modify the newly acquired B-24's. On the tactical side, valuable assistance was obtained from an experienced RAF crew which flew two radar-equipped Liberators.⁸⁰

The 1st Sea-Search Attack Group acquitted itself well in antisubmarine operations. Owing to its superior equipment, it in fact contributed somewhat more than its share of sightings and attacks,

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especially considering that it spent only a fraction of its time on combat patrol. But the important contribution of SADU was made, as intended, in the application of scientific and technological resources to antisubmarine warfare.* It kept close contact with the National Defense Research Council and kept in touch with radar experimentation at the Massachusetts Institute of Technology, by agencies of the U.S. Navy, and under the direction of other organizations both public and private. At the same time, it initiated projects peculiar to its own mission and by the end of the year its commanding officer, Col. W.C. Dolan, would be able to report on some fifty-eight projects.⁸¹

But it was one thing to develop the weapons and tactics and quite another to use them effectively. That demanded, in Dr. Bowles' opinion, a correspondingly fresh organization constructed on principles of physical mobility and unity of purpose. He preferred not to raise the question of over-all unity of command. Rather, he proposed to increase the effectiveness of the antisubmarine organization within the Army itself, by which he meant the organization of all land-based aviation connected with the antisubmarine program. This, of course, involved the jurisdiction of the Navy, for that service, having been successful in its attempt to secure land-based bombers, was preparing to build up a land-based air arm of its own.† This tendency to develop two separate air forces, one in the Army and one in the Navy, for the same task, Dr. Bowles recognized as a fundamental weakness in the current program, and in doing so he pointed to the issue on which the future of AAF participation in that program depended, an issue resolved a year later only by the complete withdrawal of the AAF from the antisubmarine effort.

He recommended, therefore, that an "Air Anti-Submarine Force" be organized under the command of a general officer who would control the entire land-based air component of the American antisubmarine forces, including all land-based aircraft employed by the Navy for the purpose. Like SADU, this force would be placed under

* For a discussion of some of the technical innovations in antisubmarine warfare resulting from this and other research programs, see Volume II of this history.

† Delivery of B-24's to the Navy began in August. By the end of the year, deliveries had reached a total of 52, and by 1 July 1943 had totaled 209, which figure was slightly above that requested in February 1942 (see above, p. 539.) Total deliveries for 1943 were 308; for 1944, the total was 604. At the end of that year the cumulative total of B-24 deliveries had reached the figure of 964. (Figures supplied by Office of Statistical Control.)

the Commanding General, AAF, in order to relieve it from the control of any local, regional command. It would confine its operations to the American coastal waters, but would be free to send detachments or task forces to other parts of the world. It would work in conjunction with naval forces and under their operational control "wherever this may be desirable," leaving the conveying of ships clearly a Navy responsibility. In short, he proposed to create a unified force of land-based aircraft, built solidly around the radar-equipped B-24, capable of waging offensive war against an elusive and mobile enemy.⁸²

Formal action on the long-discussed command began in September. The final settlement was, however, less radical than that favored by Dr. Bowles. It retained only those reforms suggested by Army planners that did not specifically reduce the over-all authority of the Navy. On 14 September, General Marshall wrote to Admiral King: "Experience with the First Bomber Command in antisubmarine operations since March indicates that the effective employment of air forces against the submarine demands rapid communications, mobility, and freedom from the restrictions inherent in command systems based upon area responsibility." Accordingly, he proposed to create the "First Antisubmarine Army Air Command," which would absorb those portions of the I Bomber Command engaged in anti-submarine work. Control of the new unit would be centralized in the War Department in order that it might be promptly dispatched to zones of submarine activity wherever they might develop. It would begin operation in Atlantic coastal waters, the Gulf, and the Caribbean; its expansion to other areas would depend upon the planes available. Operations "naturally will be under the operational control of the sea frontier concerned." The closest co-operation with the Navy, especially in the transmission of intelligence which could only be compiled through naval sources, would be essential to the proper functioning of this command. Provision would therefore have to be made for liaison between "our immediate headquarters."⁸³

On 22 September, General McNarney instructed General Arnold to organize the new command, using I Bomber Command as cadre. It was activated on 15 October 1942, under the designation, Army Air Forces Antisubmarine Command. Subsequent orders clarified its mission and command status. It was to attack hostile submarines "wherever they may be operating," which gave it considerable lati-

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tude. Provision was made for transferring units, with the concurrence of Operations Division, General Staff, to extracontinental areas on a detached service basis. General Larson, as commanding general, was responsible to the director of Military Requirements through the director of Bombardment, but matters of policy, broad plans, and the development of new weapons and equipment remained with the Commanding General, AAF.⁸⁴

Naval headquarters viewed the new command with but modified approval. To General Marshall's proposal of 14 September, Admiral King had replied that, although he concurred in general, he believed "the preferable method" to be the allocation of air units to sea frontiers, such allocation to change from time to time and from frontier to frontier as the exigencies of the war dictated. He would, he said, continue to exercise control over Army planes through the commanders of the various sea frontiers. The final settlement involving the activation of the Antisubmarine Command he appears to have considered a War Department measure only.⁸⁵

As a matter of fact, that settlement settled very little, except for the resultant improvement in the internal organization of the Army's own antisubmarine forces. It left undefined the nature and extent of the operational control to be exercised by the Navy; and it left untouched the problem of duplication, the parallel development of two land-based air forces for the same task. Consequently, within this undefined area there remained ample room for continued debate and confusion, especially in view of the fact that differences also remained concerning the most effective way of employing long-range, land-based aircraft in the antisubmarine campaign.

The story as it must be left in the present volume is thus an incomplete one. The submarine presented a still increasing menace, and the debate concerning the best organization for and employment of antisubmarine air forces continued well into the summer of 1943.*

* The story of the Antisubmarine Command will be presented in Volume II.

SECTION IV

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PREPARATIONS FOR THE AIR WAR AGAINST GERMANY

CHAPTER 16

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PLANS, POLICIES, AND ORGANIZATION

IN THE Pacific, the air war began with the surprise attack on Oahu. The Japanese, for reasons sufficiently cogent, had chosen to launch the attack in the quiet of a December Sunday morning. It was sudden, all-out war. Within a matter of hours, or at most of a few days, American air forces in Hawaii and the Philippines were all but annihilated.

In the European theater, the AAF went to war more deliberately, choosing the Fourth of July, 1942, as an appropriate day to strike. It was only a token blow—six Eighth Air Force light bomber crews flying borrowed Bostons in an RAF routine sweep against enemy airfields.* During the seven months which had intervened since Pearl Harbor, the AAF's war against Germany had been confined to antisubmarine patrols. In the Pacific, pilots had become veterans and combat units had burned out before the first sortie was flown over the European continent. When, on 17 August, the Eighth Air Force dispatched the initial U.S. bombardment mission against occupied France, † the first phase of the Pacific war had run its course. The Jap, in a series of rapid thrusts, had reached his widest perimeter. He had been checked in the Coral Sea, defeated decisively at Midway, and had pulled back from his feint at Dutch Harbor to hibernate on Attu and Kiska. He had conquered northern Burma, cutting the road to China; but already the Tenth Air Force with its newly formed China Air Task Force had begun the long struggle to maintain an air link with China. Port Moresby, key to the defense of northeastern Australia, had been saved from amphibious assault by the success of

* See below, pp. 658-59.

† See below, pp. 661-64.

the U.S. Navy in the Coral Sea, and the attack from over the Owen Stanley range, just inaugurated by the Japanese army, was soon to boomerang in the Allied drive for Buna. In New Guinea, then, and in the Solomons where the Marines had landed on 7 August, the Papuan and Guadalcanal campaigns were just ushering in the second phase of the Pacific war—that of limited and local offensives which might put American forces in position to initiate later the long drive northward.

This order of things was not of our choosing; it stemmed from the complete success of the initial Japanese attacks. Prewar decisions to concentrate first against Germany had been based on the assumption that Japanese forces could be contained by a strategic defensive; the simultaneous destruction of Allied sea and air striking forces had gravely altered the situation. Hence, though Anglo-American strategists could reaffirm in general terms their earlier view of the paramount importance of Germany, they found it necessary to divert to the Pacific a heavy share of the immediately available air strength, with all that implied in shipping and logistical support. This reversal in priorities, though temporary, inexorably retarded the air effort in Europe—and so it was that the bomber campaign against Germany, conceived in 1941 as America's first offensive against the Axis, limped into action some thirty-six weeks after war began.

In the meanwhile, however, preparation for the air war against Germany had gone on, somewhat hampered by successive reappraisals of over-all strategy. It is with those preparations and their first fruits that this section is concerned. The present chapter deals largely with plans—the general strategy, the mission of the Army Air Forces therein, and the means by which its leaders proposed to accomplish that mission. The following chapter will describe the actual establishment in the United Kingdom of the Eighth Air Force and its logistical support. And finally, that this volume need not close without at least one blow against Germany, the last chapter will tell the story of the first AAF bombardment mission over western Europe.

The Bomber Offensive in World Strategy

When the Japanese hit Pearl Harbor, the Army Air Forces was shunting air units to the Pacific in a desperate effort to bolster U.S. defenses in the Far East. But during most of 1941 the Air Staff in its planning had followed, enthusiastically and with few misgivings,

the recommendations of the Anglo-American staffs that the principal war effort should be exerted first against Germany. The corollary proposal, that "U.S. Army air bombardment units [would] operate offensively in collaboration with the Royal Air Force, primarily against German Military Power at its source,"¹ was accepted as the AAF's first and most important mission outside the Western Hemisphere. When the President and Mr. Churchill met with their military staffs in the ARCADIA conference they were still determined, "in spite of recent events," to knock Germany out of the war first. But any decision in respect to the bomber offensive had to be made with a cautious eye on the immediate situation in the Pacific.*

At the first session of the conference, the two chiefs of state agreed informally and tentatively that AAF heavy bombardment units should be sent to England according to earlier designs.² When that agreement was formally adopted by the Anglo-American chiefs of staff on 13 January 1942, the phrasing ran simply that "the movement of US Army Air Forces to the UK should proceed as soon as forces and shipping become available so as to increase the weight of attack on Germany."³ The date of deployment and the size of the force would depend upon a complex of factors, many of them rooted in the Pacific war. This meant, then, a delay of indeterminate length in the fulfilment of any long-term plan built, as had been AWPD/1, around a huge bomber force in England. It meant also scrapping earlier estimates of more immediate deployments. ABC-1 had called for thirty-two AAF squadrons in the United Kingdom in 1941; the original RAINBOW No. 5 tables listed four groups of bombers and three of pursuits, to which an additional bombardment group was added in the revised tables of 19 November.⁴ The Air Staff would have preferred a more flexible and realistic commitment—"Those air forces as dictated by circumstance"⁵—but in any event it had been presumed that at outbreak of war, or even before, a substantial air contingent should be sent to the British Isles. Now that war had come, there were more pressing needs.

The British naturally were interested in the projected bomber force, but were anxious that it be provided without jeopardy to current allocation of heavy bombers to the RAF.⁶ No immediate cut was contemplated; and on 1 January, General Arnold told Air Chief Marshal Sir Charles Portal that it might be possible to send two

* See above, pp. 136-49, 237-39.

heavy bombardment groups before too long—his guess of “about March or April” was only a “shot in the dark.”⁷ Within the Air Staff it was estimated that out of the 115-group program, sixteen bombardment and five pursuit groups would be available for the task force in the United Kingdom. Most of these units would be ready only in the last months of 1942, but the Air Staff, accepting a spring date for planning purposes, gave to the two heavy bomber groups and supporting units a high priority.⁸ Thus on 15 January they listed projected task forces in this order of urgency: (1) Task Force X (heavy bombers for Australia); (2) Task Force FIVE ISLANDS (for defense of South Pacific ferry bases); (3) Task Force BR (bomber force for United Kingdom); (4) GYMNAST (Northwest Africa); (5) MAGNET (Northern Ireland); (6) Task Force CAIRO (to Egypt).⁹ On 27 January the Combined Chiefs of Staff agreed that the first two heavy bomber groups available should be assigned to an American bomber command in the British Isles, to “operate independently in cooperation with the British Bomber Command.”¹⁰ Detailed plans for the initial movement of forces, now calculated for 15 May, were prepared for the Combined Staff Planners by AWPD.¹¹ The task of building an organization for the proposed force was begun under supervision of Maj. Gen. Carl Spaatz, commanding general of the Air Force Combat Command and designated leader of the Army Air Forces in Great Britain. On 4 February, Brig. Gen. Ira C. Eaker, chosen to head up the bomber command, left for England to arrange for the reception of the initial units.¹²

In view of the fluid tactical situation and the conflicting demands from every theater, it was to be expected that AWPD's suggested allocation to Task Force BR of 21 groups from the 115-group program would be subject to later modification. More disconcerting was the competition for the initial units earmarked by the CCS on 27 January and already tentatively designated by number in the AAF.¹³ Again it was enemy victories and their repercussions which threatened accepted priorities. Reinforcements to Australia and the South Pacific were dispatched pretty much as planned. MAGNET offered little effective competition either immediately, or as time was to prove, in the future. GYMNAST was shelved in March and was for a few months out of the picture. But in the late winter and early spring of 1942, the Middle East loomed as a new danger spot, perhaps as the key to Axis strategy. At ARCADIA, Sir Charles Portal had

suggested to Arnold that one group of heavy bombers be sent to Egypt, even though it was realized that this reinforcement could be made only by borrowing from Task Force BR.¹⁴ Arnold had declined the request, and it was then agreed that the one group of heavies set up for CAIRO was to go out only after the initial BR increment.¹⁵

On 22 February the British chiefs of staff proposed to the CCS a new "Policy for Disposition of US and British Air Forces."¹⁶ This memorandum greatly extended the scope of diversions from earlier agreements. The United States was asked to provide additional air strength for the Pacific, to conduct bomber operations from China against Japan, to assist the British with heavy bombers in the Burma-Indian Ocean theater and, if necessary, in the Middle East. Since these commitments could be met only by utilizing the two heavy bombardment groups scheduled for the AAF bomber command in the British Isles, it was suggested that for the present the RAF would assume sole responsibility for the air offensive against Germany, with the AAF joining in "at the earliest dates practicable."

The air deployments recommended in this memorandum received strong support in a long cable from Churchill to Roosevelt, delivered on 5 March, in which the Prime Minister reviewed gravely, almost pessimistically, the current strategic situation.¹⁷ The immediate prospect was indeed gloomy. The Japs had swept southward with hardly a check. Malaya was gone. The Netherlands East Indies and Burma, already invaded, were doomed. The Indian Ocean was open to Japanese warships and aircraft, and India itself was in danger. Rommel was building up his forces for another push toward the Nile, and the dreaded Axis pincers movement with a junction somewhere east of Suez seemed an imminent possibility. The additional threat of a Nazi thrust to the Caucasus in summer, and thence to meet the Japanese in India, made of the Middle East a crucial area. The British public, disappointed that promised victories in Egypt had been turned into defeats, had been profoundly shocked by the bold escape from Brest of the *Scharnhorst* and *Gneisenau* on 12 February and by the fall of Singapore on the 15th, and Churchill's government was under bitter criticism. It is little wonder that the Prime Minister had lost something of his confident tone of ARCADIA days and had for the moment less concern for the war in northwestern Europe than in distant parts of the empire. To gain additional air support for Australia, Burma, India, and Egypt, he was willing to postpone MAGNET,

GYMNAST, and the build-up of the AAF striking force in England.

Such changes in scheduled air deployments and the strategy implied thereby were vigorously opposed by the AAF—first by General Arnold in a White House conference on 6 March, and later in a more elaborate statement prepared by the Air Staff and incorporated into the President's reply.¹⁸ In general the Air Staff's stand was for concentration, against dispersal, of forces; specifically, it advocated sending minimum reinforcements to the Pacific and Middle East and throwing into England all units previously intended for GYMNAST and MAGNET. This attitude followed that currently entertained by the War Department; essentially based on the strategy of ABC-1 as modified at ARCADIA, Army planning in February and March was more deeply concerned with the Russian front than with possible dangers in the Middle East.

The situation on the eastern European front was difficult to evaluate in Washington. Early pessimism concerning the Soviets' chance of survival had been somewhat allayed by their successful defense of Leningrad and Moscow, and by their winter counteroffensive. But it was understood that the German withdrawal had not been the rout described by Moscow, and it seemed highly probable that with spring Hitler would try to finish off the U.S.S.R. before the United States could bring to bear in Europe its full strength. Earlier plans had conceived the main American effort as an assault on the continent from bases in the United Kingdom, to be delivered only after a powerful force had been established there and after Germany had been weakened by an intensive bomber offensive. Now it appeared that the danger of a complete German victory on the eastern front might warrant a more immediate diversionary invasion of the continent by a smaller force. In America, as in Britain, military strategy could not be divorced entirely from political considerations. Popular demands for a second front in Europe, already strong in England, were becoming increasingly vocal in the United States. For national morale, offensive action on some front was certainly needed. Opponents of the administration were critical of the evident determination to subordinate the Japanese to the European war; ignoring the utter impossibility of getting troops to the Philippines, they coupled demands for the relief of MacArthur with protests against the dispatch of "large" forces to the inactivity of Northern Ireland. The decision to have a go at the Nazis first had been made on sound military grounds, but it required

little political imagination to foresee the nature of the coming congressional elections if operations in the chosen theater were indefinitely postponed.

The American position in respect to a second front was not without a certain weakness. What with the current rate of production, the heavy materiel responsibilities to allies, the status of trained units, and, above all, the dearth of shipping, the United States could not at an early date deploy and support in a European campaign any large forces. This meant that the British must bear the heaviest initial burden, and in March there was some doubt in the General Staff that they would underwrite a large-scale operation under those conditions.¹⁹ Nevertheless, study on the projected invasion continued throughout March, and on the 27th, WPD was ready with its "Plan for Operations in Northwest Europe." Three days later AWPD added its accompanying plan for air operations.²⁰ The project called for an invasion of northern France either in autumn 1942 or spring 1943. There were to be four phases of air activities: preparation and training; a preliminary strategic bombardment campaign; close support of ground forces during and after the landing; and a return to strategic targets when the proper equipment was released from covering the landing. The Combined Staff Planners doubted that the requisite air superiority could be achieved by September, but were confident of success by the following spring.²¹

The plan was approved in principle by President Roosevelt, and on 8 April General Marshall and Harry Hopkins arrived in London to elicit British support. In his first meeting with the Chiefs of Staff Committee on the 9th, Marshall urged that a firm decision be reached soon as to the locality and timing of the main Anglo-American effort; this was needed to guide production, allocation, training, troop movements, and the like. American preference for an early assault on western Europe he ascribed to the necessity of aiding the Red army and the desire to get U.S. troops into an active theater where they could gain experience in large-scale operations. The United States, because of its heavy commitments elsewhere, could not build up a great force in England before spring 1943; but if the Russian situation deteriorated badly, it might be necessary to mount a more modest "emergency operation." By mid-September the Army would have in the United Kingdom one armored and two and one-half infantry divisions, supported by some 400 pursuits, 300 bombers, and 200

transport planes; this force he was willing to commit if it became expedient.²²

The British replied that they had been thinking along similar lines—of a grand invasion in 1943, or an earlier one if the Soviets were facing defeat or if the Germans showed signs of cracking.²³ They enumerated practical difficulties which would make an invasion in 1942 extremely hazardous—the limited period of favorable weather which could be expected; the serious shortages in shipping, in landing craft, and in air strength; and other factors which seemed scarcely to disturb the ordinary citizen who was crying for a second front, but of which General Marshall was painfully aware. Yet after further study of Marshall's plan, the British on 14 April accepted it in principle; the main preparations should be timed for the following spring, with concurrent arrangements for a lesser operation in 1942 if circumstances demanded.²⁴ The Prime Minister, in a radio message of 17 April, informed Roosevelt of his approval of the design; his sole proviso was that the Japanese and Germans must be prevented from joining forces in the Middle East. If that could be forestalled, he advocated a crescendo of activities against the continent, "starting with an ever-increasing air offensive both by night and day."²⁵ His message may be taken as the official launching of the strategy which was to culminate, a year behind schedule, on 6 June 1944.

The Combined Staff Planners immediately began the long and intricate task of preparing for the movement, reception, and maintenance of the expeditionary force.²⁶ This phase of the operation was called BOLERO; the main invasion of spring 1943 was ROUNDUP, the earlier emergency landing, SLEDGEHAMMER. BOLERO committees, with representatives of the several services of both nations, were established in Washington and London. Uncertainty as to which operation would be mounted made planning difficult for the AAF; its equipment and its role would be determined by the final choice between the two alternatives.

The mission assigned to the AAF by the Combined Chiefs had been phrased in most general terms: the conduct in co-operation with the RAF of an offensive against western Europe in 1942. If SLEDGEHAMMER became necessary, the AAF could contribute little to the preliminary strategic bombardment and only modestly to direct support of the invading force. A decision to hold off until ROUNDUP would enhance greatly the weight of the bomber offen-

sive and allow time for the AAF to build a force appropriate to the invasion itself. In neither case did the plan follow exactly the earlier pattern of thought in the AAF—as exhibited, say, in AWPDI.* To the Air Staff, as to RAF Bomber Command, the bomber offensive had figured as a most vital part of the over-all strategy: an operation which by the destruction of well-chosen targets might suffice to bring Germany to her knees or, more probably, would weaken her war potential to the degree that the success of an invasion would be assured. In the new plans—in SLEDGEHAMMER especially but to a lesser degree in ROUNDUP—the emphasis was on counterair measures; even strategic bombing was looked on as a means of provoking German resistance so that the Luftwaffe might be trimmed down and the Allies might secure that superiority in the air deemed necessary for a successful crossing of the Channel. The importance of this aspect of the air offensive had been appreciated in both allied air forces. RAF officers and General Eaker alike were of the opinion that an intensive bomber offensive would in itself constitute something of a second front by drawing GAF strength westward;²⁷ and Eaker feared, not without justification, that an attempt to build up air and ground forces simultaneously would react unfavorably against priorities which logic and previous designs had given to the AAF. But those opinions were submerged in the new strategy; air plans must be built around the alternative schemes for invasion. This meant, for one thing, a reappraisal of target objectives. General Spaatz explained this necessity to Mr. Stimson by pointing out that whereas the European strategy had originally been conceived as involving the use of air power *supported by ground forces*, it was now a matter of air power *supporting ground forces*.²⁸ The new strategy demanded also a re-examination of the needs of the Army air force in Britain in terms of trained units and equipment.

That review was necessary first because the new mission could not be carried out with the B-17's and B-24's and fighters which had been intended as the bomber command's striking force. The need now, as Arnold said, was for a "balanced force."²⁹ But there were also wider issues touching the assignment of organized units to the various theaters and the allocation of aircraft production potential among the several nations. It has previously been shown that at ARCADIA the output of American aircraft factories for 1942 had been allotted to

* See above, pp. 148-49.

the United States and Great Britain (and through them to other user nations) in the Arnold-Portal agreement.* Based on the principle that aircraft allocation should be guided by immediate ability to use the planes in combat, the agreement had provided for revision when warranted by changing conditions. In Washington the Munitions Assignments Board † had never considered this schedule as more than a temporary guide, and by May of 1942 it was apparent that the related problems of allocation and deployment must be restudied.

That need had been implied by the British memorandum of 22 February. Now that the SLEDGEHAMMER/ROUNDUP strategy had been accepted, the RAF wanted the United States to increase the allocation of P-40's for the Middle East in return for Spitfires to equip AAF fighter units in England, by which expedient RAF Fighter Command might build a reserve against the heavier losses which an intensive offensive in Europe would entail.³⁰ On the American side there were equally cogent reasons: unexpected attrition in the Pacific; the rapid expansion of the training program with its operational training units crying for combat planes; and the natural desire of the public that U.S. planes be flown by U.S. crews. The demand from theaters of U.S. responsibility for additional aircraft continued strong. That was particularly true of the Southwest Pacific, where MacArthur had assumed command on 18 April. A fortnight later, the Joint Chiefs of Staff were alarmed by a query from Roosevelt as to whether aircraft strength in Australia "could properly be" increased to 1,000, ground forces to 100,000. The question seemed momentarily to indicate some wavering in purpose, but the President immediately explained that his message had been merely an inquiry, not a directive. He wished to deploy in the Southwest Pacific only enough planes to fulfil present objectives, and desired that existing arrangements for Europe be carried out: "I do not want 'Bolero' slowed down."³¹ This was on 6 May; on the 17th he repeated the sentiment,³² and a week later a group of high-ranking Army and Navy officers left for London for further discussion of BOLERO needs. In the group were General Arnold and Rear Adm. John H. Towers of the Navy's Bureau of Aeronautics. They had been directed to confer with Portal and a representative of the Fleet Air Arm, and to draw up a new

* See above, pp. 248-49.

† See above, p. 249.

statement of allocation policy which the Combined Chiefs might act on after their return.³³

The discussions were opened in London on 26 May, first in a general meeting with Churchill, later among the airmen alone.³⁴ Arnold reviewed the aircraft situation in the U.S. armed forces and the effect of commitments to China and the U.S.S.R.; he stressed the President's desire that "every appropriate American-made aircraft be manned and fought by our own crews."³⁵ This principle the British were willing to accept if it carried the corollary determination "to bring into action against the enemy at the earliest possible date in the appropriate theaters the greatest strength in fully trained air forces that it was possible to create out of the combined aircraft production, trained manpower and shipping of the United Nations."³⁶ Several days of intensive study and debate followed, as Americans and British presented their respective views on problems of allocation, deployment, supply, maintenance, and operations. An VIII Bomber Command officer remarked that "the meetings were in the nature of a horse trade."³⁷ An old hand at this sort of give-and-take, Arnold confessed that he found it "exceedingly difficult to conform 100% with the principles" insisted on by the two governments. On the 30th, he presented Portal with a memorandum outlining the American reaction to the discussions.³⁸ Essentially the document represented a compromise, and Arnold saw only a few issues which promised any great difficulty in solution: the British desire for reinforcement of the Middle East; the RAF Coastal Command's request for long-range bombers, which would saddle the AAF with a burden more appropriately the Navy's under the U.S. organizational system; and the competitive demands for light bombers, a type badly needed for any air-ground co-operation, which must come almost entirely from U.S. factories. In his reply of the 31st, Portal recognized "what a very real effort you have made to meet our point of view." He commented on the controversial points and suggested that the agreement be consummated after Arnold's return to Washington.³⁹

His suggestion was followed. After further negotiations in Washington, the Arnold-Towers-Portal agreement was adopted on 21 June, Air Vice Marshal J.C. Slessor signing for Portal.⁴⁰ The correlative principles accepted in London were repeated, with the added proviso that revisions in allocation should be so framed that combined strength in each theater should be maintained or increased. To con-

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form to these general rules, the United States should: (1) allocate to Great Britain for the RAF and Dominion air forces aircraft according to an accompanying schedule for regions where U.S. air forces could not operate; * and (2) assign to theaters of British or combined

** ANNEX A: Allocations of Aircraft Other Than Fleet Air Arm Types to Great Britain*

1. All aircraft allocated to Great Britain up to 31st May 1942 shall remain at the disposal of the British Government, including 19 B.17 Fortress, 6 B.24 Liberator and 24 B.25 which have at different times been temporarily transferred on loan to U.S. Air Forces from British allocations, but excluding 387 Bostons from British allocations transferred to Russia.

2. The following aircraft (excluding Flying Boats) will be allocated to Great Britain from production in the United States in 1942.

	B.24	B.34	Bos- ton A.20C	Hud- son	Balti- more	Ber- muda	Venge- ance	P.39	P.40	P.51
June	28	—		47	60	34	60		100	80
July	6	—	37	80	60	39	60		150	40
Aug.	4	—	49	78	60	57	60		50	40
Sept.	4	17	19	96	60	63	61	60	50	40
Oct.	4	63	52	42	60	48	100	60	50	—
Nov.	4	20	24	12	60	61	167	60	50	—
Dec.	4	—	—	—	60	61	117	70	50	—
Total 1942	54	100	181	355 ^a	420	363	625	250 ^b	500	200 ^c

(a) Includes 200 troop carrying and transport versions.

(b) In exchange for 150 Spitfires to equip and maintain one group.

(c) In exchange for 200 Spitfires to equip and maintain a second fighter group.

The figure of 200 P.51 may be increased as a result of a review later in 1942.

3. Additional allocations of types included in para. 2 above up to 1st April 1943 will be as follows:

B.24	4 a month or enough to meet attrition on 80 U.E.
B.34	Nil
Boston	19
Hudson	45
Baltimore	180
Bermuda	387
Vengeance	418 (a)
P.39	Nil
P.40	50 a month
P.51	Nil (b)

(a) British would accept 3/4 of this figure to enable U.S. to meet their S.W. Pacific commitments.

(b) Subject to revision if additional production is created using Merlin 61 engines.

4. British squadrons using American aircraft operational under this agreement on 1st April 1943 shall be allocated the aircraft necessary to meet their attrition and that of their supporting O.T.U.'s after that date.

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strategic responsibility, by agreed dates, certain specified AAF units with requisite support.* These were to serve in homogeneous American organizations, under control of the appropriate British commander in chief. Specific arrangements were made to meet British needs in spares and parts, to provide for the handling of Dominion requirements within U.S. spheres of influence, and to pool the inadequate resources in transport planes.

The Arnold-Portal-Towers agreement was accepted by the U.S. Joint Chiefs on 25 June, by the CCS on 2 July.⁴¹ It still left each nation with heavy responsibilities to the U.S.S.R., China, and other

** ANNEX B: United States Air Forces Assigned to British and Combined Theatres of Strategic Responsibility*

The following United States forces will be established and ready for operations in British and Combined Theatres of strategic responsibility by the dates shown:

1. *Middle East.*

- | | |
|------------------------|--|
| <i>Heavy Bombers:</i> | One group to be completed to full strength (35) by October 1st 1942. |
| <i>Medium Bombers:</i> | One medium bomber group (57) will be available for "fly away" from the United States by 15th July and will be operational in Middle East by September 1st 1942. A second medium bomber group (57) by December 31st 1942. |
| <i>Pursuit:</i> | One group (80) by September 1st 1942
One group (80) by October 1st 1942
Two groups (160) by January 1st 1943
Two groups (160) by April 1st 1943. |
| <i>Total:</i> | Six groups (480). |

2. *India.*

- | | |
|------------------------|--|
| <i>Heavy Bombers:</i> | One group (35) completed in September 1942 (a). |
| <i>Medium Bombers:</i> | Two additional squadrons will be established, bringing U.S. medium bomber strength to one group (57) in September 1942. |
| <i>Pursuit:</i> | Two groups (160) completed by October 1942.
The role of these groups will include collaboration in offensive operations in Burma to relieve pressure on China. In the event of a threat to India they will be used to defeat that threat. |

Note (a) As soon as this group is established as part of the defence of India, one of the two British heavy squadrons on B.24's will be rolled up.

3. *United Kingdom.*

- | | |
|---------------------------|--|
| <i>Heavy Bombers:</i> | Seventeen groups (595) by April 1st 1943 |
| <i>Medium Bombers:</i> | Ten groups (570) |
| <i>Light Bombardment:</i> | Six groups (342) |
| <i>Observation,</i> | |
| <i>Photo Mapping:</i> | Seven groups (399) |
| <i>Pursuit:</i> | Twelve groups (960) |
| <i>Transport:</i> | Eight groups (416). |

allies, which must be met out of their respective allotments. But for the AAF it substantially narrowed the gap between prospective combat crews and combat planes; and it gave promise of providing a strong air force for BOLERO. Within a few weeks' time, however, that promise was to be blighted by a sudden reversal of strategy.

In London, on 18 June, General Spaatz assumed command of the Eighth Air Force, the organization which had been created to carry the AAF's responsibilities in BOLERO.⁴² On the same date Mr. Churchill arrived in Washington with a small staff. Publicly it was announced that "the object in view is the earliest maximum concentration of Allied war power upon the enemy."⁴³ In the privacy of the ensuing CCS conference, a British member ascribed the visit to the Prime Minister's desire to discuss the co-ordination and "possible reorientation" of combined policy.⁴⁴ In plainer English, he was not too keen about BOLERO.

Much had happened in the two months which had passed since Churchill had approved that plan. Japanese naval losses in the Coral Sea and at Midway had eased somewhat the tension in the Pacific; the monsoon, rather than Allied successes, had for the moment lessened the threat to India. Elsewhere the news was bad. The long-dreaded summer campaign in Russia was in full swing. Mannstein had conquered the Crimea, was hammering at the inner defenses of Sevastopol. Timoshenko's winter campaign below Kharkov had failed, and German armies were already launched in their drive for the Caucasus with its oil fields and its route to the Middle East. Nazi successes in North Africa were equally alarming. There Rommel had opened his offensive in May, driving the British back and defeating them decisively at Knightsbridge on 13 June. Tobruk with its large British garrison was to surrender on the 21st, while the conference was still in session, and a week later the retreating Eighth Army was to pull up for a last stand at El Alamein, hardly seventy-five miles west of Alexandria. With or without Japanese aid, the Germans constituted a menace to the Middle East and all it stood for—rich resources, the lend-lease route to Russia, and Britain's link with India and the Southwest Pacific.

If the British interest in Egypt was most immediate, that fact was not stressed in the discussions of the Combined Chiefs of Staff. Accepted strategy for 1942-43 was contingent upon the progress of events in Russia. Intelligence available in Washington was still too

meager to serve as a reliable guide, but in general the British were pessimistic concerning the Soviet Union's chances of survival. SLEDGEHAMMER had been always thought of as an emergency operation, yet now the British chiefs of staff were dubious of its wisdom under any conditions: an operation of its contemplated magnitude would offer little relief to the U.S.S.R., and if that country collapsed the expedition might prove a serious tactical loss. The British had been examining alternative projects—a lodgment at Brest or Cherbourg, large-scale raids (Dieppe was then in the offing), or a campaign in Norway—and they understood that President Roosevelt's anxiety to get U.S. troops into action in 1942 had led him to examine other possibilities, including an offensive from Australia and the revival of GYMNAST.⁴⁵ The latter plan might offer effective relief to Auchinleck in the Middle East—a second front to benefit the British rather than the Soviets; yet after mature deliberation, the Combined Chiefs stood squarely and “without reservations” behind decisions made at London in mid-April. Those decisions were indorsed in an informal meeting on 19 June,⁴⁶ and more definitively in a paper approved on the 21st.⁴⁷ Therein it was declared as considered opinions of the CCS that: (1) the United States and Great Britain should adhere to their resolve to push BOLERO; (2) no other offensive operation should be undertaken in 1942 save in a grave emergency; (3) specifically, GYMNAST should *not* be adopted under existing conditions; and (4) planning for an emergency attack on western Europe in 1942 should be continued. This should have left ROUNDUP with highest priority, SLEDGEHAMMER a possibility, and ruled out their most formidable rival, the North African operation. What happened at the government level is not entirely clear. Brig. Gen. Asa N. Duncan, chief of staff for the Eighth Air Force, wrote from Washington to Spaatz that Churchill had made a successful plea to the President “for a lot of assistance in the Middle East,” despite objections from the American chiefs of staff.⁴⁸ The formal record of the Combined Chiefs indicates no sudden change in strategy. On 21 June, at a White House meeting, the President and Prime Minister accepted the sense of the CCS recommendations, though with an escape clause. Plans for ROUNDUP in 1943 were to be pushed, but the two nations must be prepared to act in 1942. Operations in France or the Low Countries would yield greatest results and should be considered, but if they appeared impractical, the

planners should be ready with other alternatives: GYMNAST, or campaigns in Norway or the Iberian peninsula.⁴⁹ Planning responsibilities were divided, with the Americans taking GYMNAST, the British the other two projects.⁵⁰

Actually the Washington conference had postponed rather than decided the central issue of the second front for 1942, but with only three months of favorable weather remaining, postponement was almost tantamount to refusal. Churchill was back in London by the 27th. In informed circles there it was generally accepted that there would be no cross-Channel push that year.⁵¹ On 8 July the Prime Minister informed Roosevelt that conditions favorable to SLEDGEHAMMER would probably not arise, and suggested that the Americans push GYMNAST planning while the British worked on other agreed alternatives.⁵² To the Joint Chiefs of Staff, this message seemed to endanger ROUNDUP as well as SLEDGEHAMMER. Unanimously in favor of BOLERO with either a 1942 or 1943 D-day, they were equally opposed to GYMNAST as an expensive diversion of dubious value. Since April, they had sensed a certain lack of enthusiasm among their British opposite members for a large-scale invasion through France, and unless the British would support wholeheartedly such a venture by 1943, the Joint Chiefs were prepared to turn to the Pacific for a showdown with Japan.⁵³

These views were communicated to the President on 10 July.⁵⁴ A week later General Marshall, Admiral King, Harry Hopkins, and a small staff flew to England to make a last endeavor to persuade the British to go along with SLEDGEHAMMER. This the British were unwilling to do. The memory of Dunkirk was still fresh and subsequent defeats in Africa had not lessened their respect for the German army. They pointed again to practical difficulties which had been urged in April and which they thought the Americans underestimated—particularly the shortage in landing craft and the time factor. The American position was the weaker because they could not in 1942 carry their share of the load. On 22 July it was definitely agreed that there would be no second front in Europe in 1942.⁵⁵ Discussion then turned to those alternatives upon which the Combined Staff Planners had been engaged.

On the 24th, the U.S. Joint Chiefs presented a new proposal for operations in 1942-43.⁵⁶ Preparations for ROUNDUP were to continue without abatement so long as the Russian situation seemed to

warrant it, but if by 15 September an operation in the following spring should appear impracticable, a decision should be made to launch a combined attack against North and Northwest Africa at the earliest possible date before 1 December. This recommendation was accepted by the Combined Chiefs of Staff on the 24th.⁵⁷ Apparently Roosevelt gave his tentative approval in a telephone conversation on the following day.⁵⁸ The provision to hold off until 15 September for a firm decision to mount TORCH, as the revived and revised GYMNAST plan was called, was wisely scrapped. It is difficult to say just when the two governments made a formal commitment. On 30 July, Admiral Leahy told the Combined Chiefs of Staff, then back in Washington, that Roosevelt and Churchill "believed" that TORCH was on; and so it was.⁵⁹ Intensive planning began immediately in London. With an eye on French sensibilities, the CCS had preferred an American commander for the operation, and on 7 August, Lt. Gen. Dwight D. Eisenhower, who as commanding general of the European Theater of Operations had participated in the London conference, was informed of his appointment.⁶⁰

Neither the new code name nor the choice of an American leader could obscure the fact that the strategy which had long guided JCS thought had been sharply wrenched if not broken. Planning for ROUNDUP—and even for an emergency SLEDGEHAMMER—was supposed to continue. But the Joint Chiefs in their memorandum of 24 July had realistically accepted the fact that TORCH in 1942 meant no ROUNDUP in 1943.⁶¹ For the Army Air Forces this might mean a return to the time schedule suggested in AWPDP/1, with its spring 1944 invasion, but the circumstances were to be importantly modified by TORCH.

General Arnold had from March gone along with the War Department General Staff in its preference for SLEDGEHAMMER, though ROUNDUP would have fitted more aptly into AWPDP's concept of the war. Arnold was not in London in late July, but with other members of the JCS he had been opposed to TORCH. In July as in April the British had proposed, in partial substitution for the second front, an intensification of their bomber offensive over Germany, where recent thousand-plane attacks on Cologne and Essen had already given earnest of what was to come.⁶² But TORCH ruled out for the time being any effective participation in this campaign by the AAF, much as it was to their liking. Sir Charles Portal had raised the issue

on 24 July by inquiring if U.S. air support for TORCH would be drawn from strength assigned to BOLERO.⁶³ From one as familiar with the aircraft situation as Sir Charles, that must have been a rhetorical question. There was no other source to tap, and the Joint Chiefs specifically stated that heavy and medium bomber groups would be shifted from BOLERO assignments to Africa.⁶⁴ General Spaatz thought it might even be necessary to use all AAF units in the United Kingdom for TORCH.⁶⁵

Nor was TORCH the only successful rival. On 7 July the Combined Chiefs of Staff had taken under consideration a proposed schedule of deployments according to which the AAF was to have in the United Kingdom by April 1943 a total of 3,640 combat planes.⁶⁶ But in the meeting of 24 July, the Combined Chiefs had agreed to divert from this force fifteen combat groups of various categories * to spearhead projected offensives in the Pacific.⁶⁷ This decision Arnold had vainly opposed on the ground that constant fluctuation in BOLERO assignments "makes our course seem vacillating."⁶⁸ To his mind, the Southwest Pacific loomed as a more formidable rival of accepted plans than TORCH, which after all was to be a blow against German power, if not at its source. As Marshall had pointed out in London on 24 July, the American concept of the air war against Germany had been that the AAF would operate against Germany from any suitable base, and that in winter weather Africa might offer some advantages over the United Kingdom.⁶⁹

This was perhaps an indirect reference to AWPD/1.† That plan, with its design for shuttling between England and Africa, had contemplated the use of very long-range bombers not yet in production; neither B-17's nor B-24's could hit Germany from African bases. General Spaatz was not enthusiastic about the prospects. He wrote Arnold on 11 August, "Regardless of what operations are conducted in any other theater, in my opinion, this [England] still remains the only base area from which to launch aerial operations to obtain air supremacy over Germany, and until such air supremacy is established there can be no successful outcome of the war."⁷⁰ Intensive operations could not be conducted from both areas at the same time with the limited forces available. Arnold's chief of staff, Maj. Gen. George

* Groups were as follows: three heavy bombardment, two medium bombardment, two light bombardment, two fighter, two observation, four transport. A fuller treatment of this decision will appear in Volume IV.

† See above, pp. 148-49.

E. Stratemeyer, wrote consolingly that TORCH was not to be "at the *expense* of the bombing offensive from the UK but in *addition* to it, and therefore at the expense of anything but the UK."⁷¹ That was a very poor prediction. Four days earlier, on 21 August, Admiral Leahy had remarked to the Combined Chiefs that TORCH might necessitate revision of deployments currently under consideration.⁷² Time was to prove him right.

One adverse concomitant of the TORCH diversion could not be measured wholly in quantitative terms. The Eighth Air Force had built its plans around a new weapon—the day bomber—and a new tactical principle. Arnold had originally wished to hold the B-17's and B-24's out of action until he could unleash against the Germans a considerable force. Though that scheme had not been adopted in principle, delays in movements of the initial units and schedules for a rapid build-up for BOLERO had promised to accomplish the same purpose. But TORCH meant that AAF heavy bombers would be fed in piecemeal and that American equipment and techniques would be exhibited to the GAF without adequate returns. The results were not as disappointing as the premature introduction of the tank in World War I only because the novelty of the weapon was not so pronounced in 1942; fundamentally the cases were parallel.

Command and Organization

The constant flux in grand strategy for the war against Germany made it difficult to plan, with any degree of firmness, the practical measures by which success in the air phase might be assured. Perhaps the most obvious example of that difficulty has been suggested in the references above to frequent changes in allocation of AAF combat units to the European theater. Both over-all strategy and contemplated deployments, in turn, affected the organization and the chain of command through which those units would operate. The problems involved in this latter respect were to AAF Headquarters hardly less significant than that of finding sufficient forces. In a popular account of air warfare published in 1941, General Arnold and Colonel Eaker had written: "Organization is a dry topic. . . . It is likely, for that reason, that it will receive less attention than it merits. Actually, organization . . . is the most important of all the military functions."⁷³ If that judgment reflected something of the Air Corps' long struggle

for autonomy, it was also in some degree prophetic; for within a few months both authors were involved in the arduous task of providing a sound administrative and command structure for the Army's largest overseas air force—that scheduled to operate from the United Kingdom. Dry topic or no, organization must figure prominently in this chapter.

The ABC-1 report of 27 March 1941 had enunciated two principles for the control of combined operations: unity of command in each theater, and integrity therein of the forces of each nation.* Born of bitter experience in World War I, those principles were cherished by both Americans and British, and the early allocation to each of theaters of primary strategic responsibility facilitated more specific arrangements once the United States entered the war. The first practical test came in the Southwest Pacific, where the ABDA Command was established in January 1942 under those trying circumstances which have earlier been described.† The command problem in the United Kingdom was in some respects less complex, and in the absence of sustained enemy attacks its solution was of less immediate urgency. Yet because of the strategic importance of the European theater, the organization of American and British forces therein became a matter of grave moment. The British, naturally, had been charged with primary strategic responsibility in that area. With the adoption first of BOLERO, then of TORCH, the question of an expeditionary—as opposed to the theater—command structure was raised. Meanwhile the organization of the U.S. forces in Great Britain had to be determined, as well as the internal structure of the air component. The Army Air Forces was deeply concerned with the organizational problem at each of these three levels, but of most interest here is the process by which the Eighth Air Force was established under the European Theater of Operations, U.S. Army (ETOUSA). Aside from its intrinsic significance, the story aptly illustrates a point made in a previous context: ‡ that regardless of the legal position of the AAF as a service and training organization without combat functions, its chief was in fact a most powerful agent in the conduct of war in the several theaters.

The command agreements in ABC-1, couched in most general

* See above, p. 138.

† See above, pp. 367-71.

‡ See above, pp. 265-67.

terms, were in the nature of a general guide rather than of a specific directive. All armed forces of both nations serving in the United Kingdom and British home waters (including Iceland) were to be under the strategic direction of the appropriate British commander in chief; all U.S. forces were to be under the immediate control of the commanding general of the U.S. Army Forces in Great Britain (or British Isles—USAFBI).⁷⁴ What that would mean in actual practice, no one knew; an American general could write somewhat perplexedly in September 1941:

I find certain terms not susceptible of standard interpretation by our own people, with the general result of a somewhat cloudy issue. I keep struggling with "strategical direction," "operational control," and "administrative command". . . . I am not trying to start an argument but I am trying to call attention to the need for evolving a practical and efficient command system under circumstances for which I know no precedent.⁷⁵

RAINBOW No. 5 had vested the commanding general of USAFBI with the duty of developing such a system, giving him "authority to arrange with the Air Ministry and the War Office concerning the organization and location of our task forces and operational control."⁷⁶ Until war should invoke RAINBOW No. 5, there would of course be no USAFBI commander, but as an interim means of liaison, the two nations had agreed to exchange military missions: the British Joint Staff Mission at Washington, the American Military Mission at London.⁷⁷ The American mission was to consist of offices known respectively as the Army Special Observer Group (SPOBS) and the Naval Special Observer Group (SPENAVO).

Ostensibly the establishment of SPOBS merely regularized a practice already in operation, for in 1940 the Air Corps had sent a number of officers of various grades to watch the Battle of Britain.⁷⁸ Among the senior officers was Maj. Gen. James E. Chaney, a man of wide military experience; his tour was especially appropriate in view of an earlier assignment as a military attaché in Europe and of his current dual command over the Air Defense Command and what was to become the vital Northeast Air District.* After six weeks in England, Chaney had returned in November 1940 to render an optimistic report on Britain's chance of surviving the air blitz.⁷⁹ In the following April he was ordered back to London as commander of SPOBS, with Brig. Gen. Joseph T. McNarney as his chief of staff.⁸⁰ The choice of

* See above, pp. 152-53.

two Air Corps generals to head up the office was in itself an indication of the prominence assigned to air power in existing plans for the war against Germany.

General Chaney opened his headquarters in the American Embassy building on 19 May 1941.⁸¹ His mission was a complex one, involving preparation for the possible establishment of U.S. ground and air forces, assistance in allocating lend-lease materiel, advising General Marshall on the employment of Army forces in the United Kingdom, and, in general, handling any problems involved in implementing ABC-1.⁸² Chaney attacked his manifold duties with energy and dispatch. He reported immediately to the British Chiefs of Staff Committee, and on 6 June began what was to be a close association with the Air Ministry; throughout his tour of duty, his relations with the British were good.⁸³ Chaney himself, or members of his staff, inspected potential sites for Army installations in Iceland, Scotland, Northern Ireland, and England, and made tentative arrangements with the British for development of desired bases.⁸⁴ In September, Chaney accompanied the Harriman-Beaverbrook mission to Moscow.⁸⁵ During the months just preceding and following Pearl Harbor, Chaney, often working with special AAF missions from or in the States, was concerned with a number of special projects: TRIGGER, a plan to set up in America, with RAF aid, a model air defense sector; SHADOW 82, a plan for the AAF to understudy and eventually to relieve RAF fighter units in Northern Ireland; TURBINLITE, a design to provide an AAF night fighter squadron with special RAF equipment and indoctrination.⁸⁶ These projects were adversely affected by new priorities established early in the war; in spite of much effort expended, all proved abortive. Throughout his incumbency, General Chaney, like every AAF commander, was hampered by a dearth of properly trained officers and by frequent changes in plans in Washington. There was, too, until a clarification of his directive in September, some ambiguity in the relations between SPOBS and the military attaché in respect to responsibilities for technological aspects of air materiel.⁸⁷ But however consuming in time and attention these duties may have been, the most important function of SPOBS was to prepare for the establishment and control of U.S. forces in Great Britain as provided in RAINBOW No. 5.

At the time of his assignment to SPOBS, General Chaney had been informed that he would probably remain as head of the military mis-

sion when war came, and it was generally assumed that SPOBS or that mission, with Chaney in command, would form the nucleus of USAFBI.⁸⁸ This assumption had been officially confirmed by November 1941,⁸⁹ and hence throughout his year overseas Chaney, in one capacity or another, was charged with determining the organizational structure for U.S. forces in Britain. On 20 September he wrote to General Marshall concerning this "matter of prime importance," outlining a system of operational and administrative controls based on his concept of the RAINBOW No. 5 task forces.⁹⁰ A few weeks later he was called back to Washington on temporary duty, and there on 7 November General Arnold and members of the Air Staff described to him a new type of theater air force which Lt. Gen. Frank M. Andrews was finding successful in the Caribbean.* When Chaney returned to London a few days later, he carried a letter from Arnold which urged the adoption of this system in the United Kingdom.⁹¹

General Arnold's scheme reflected on a lower echelon the forthcoming reorganization of the War Department; some important features were borrowed from the RAF. He proposed to effect a sharp cleavage between air and ground elements in the theater, integrating the former into a "composite air force" under a single air commander who should be directly responsible to Chaney as commanding general of USAFBI. The air force was to comprise a bomber, an interceptor, and a service command. All air units would be assigned to this force and would not be responsible to the subcommanders of the several task forces listed in RAINBOW No. 5. Such a scheme would insure for the air component unity of command and integrity of forces, while relieving Chaney of administrative and tactical details; it was also flexible enough to accommodate the vast air force which might eventually be deployed in England.

Chaney's reply, a long letter of 5 December, consisted of a critique of Arnold's proposal and a description of his own plan, essentially that which he had suggested to Marshall in September.⁹² Chaney thought that Arnold's desire for separate air and ground organizations was based upon a misconception of RAINBOW No. 5. Ground forces designated therein were small, and save for the token force existed only for protection of air and naval bases—hence no ground force commander was needed. Air forces would have two missions: to provide, in certain areas, an "air defense, integrated into the air defense of

* See above, pp. 163-64.

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the U.K.”; and to join RAF Bomber Command in operations against Germany. These tasks had nothing in common to require an over-all air commander for USAFBI, and since interceptor units, save those in Northern Ireland, would be under operational control of RAF Fighter Command, the AAF would need no interceptor command. Because AAF bombers would have the special mission, in co-operation with the RAF, of attacking strategic targets chosen by Chaney and the Air Ministry, it was proper that there should be a USAFBI bomber command. On the other hand, supply and maintenance should be performed locally by task force commanders, with the aid of a unified theater service base but without a special air service command. Graphically, Chaney illustrated his ideas with this simple chart: ⁹³

HQ USAF in GB

HQ USAF ICE- LAND (ICE- LAND BASE COMMAND)	HQ USA INTER- CEPTOR COM- MAND IN N. IRELAND	HQ USA BOMBER COMMAND	HQ 1st PRO- VISIONAL BRIGADE IN UK (“TOKEN FORCE”)	HQ USA BASE COMMAND IN UK (COMMUNI- CATION ZONE USAFGB)
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Arnold and Chaney were agreed that unity of command should be achieved and that the theater commander should be freed from concern for details of administration and tactics, but they differed sharply as to the means of effecting those ends. General Chaney, clinging to a literal interpretation of RAINBOW No. 5, wished to delegate responsibilities along regional rather than functional lines. He had the advantage of an intimate knowledge of local conditions and of a sound position in the chain of command. General Arnold, looking toward the future, saw the problem in light of the imminent reorganization of the War Department and of the tremendous air force suggested for the European theater in AWPDP/1. These conflicting views were not easily resolved, but the tide was turning in Arnold's direction; to what degree he was responsible for that trend may be sensed from the documents.

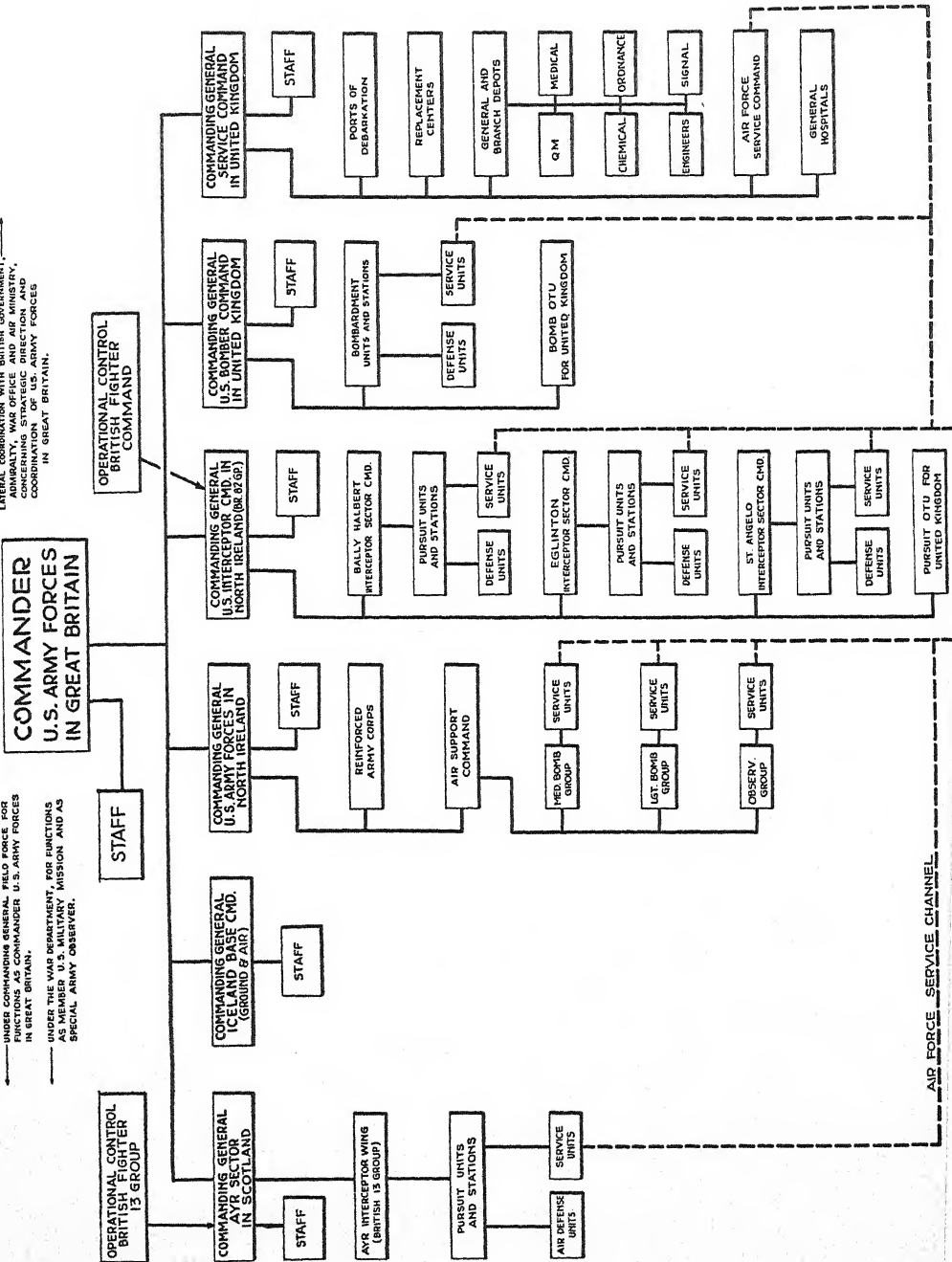
When war came, no action had been taken on Chaney's recommendation or on Arnold's counterproposal—McNarney was then en route to Washington with the former's letter of 5 December and a more detailed explanation of the ideas of his chief.⁹⁴ The directive of 11 December ⁹⁵ which put RAINBOW No. 5 into effect strengthened Chaney's hand. On 8 January he was designated commanding gen-

SCHEMATIC ORGANIZATION

RECOMMENDED BY COMMANDING GENERAL, U.S. ARMY FORCES IN THE UNITED KINGDOM FOR
U.S. ARMY AIR FORCES IN THE UNITED KINGDOM

— UNDER COMMANDING GENERAL FIELD FORCE FOR
FUNCTIONS AS COMMANDER U.S. ARMY FORCES
IN GREAT BRITAIN.
— UNDER THE WAR DEPARTMENT, FOR FUNCTIONS
AS MEMBER U.S. MILITARY MISSION AND AS
SPECIAL ARMY OBSERVER.

LATERAL COORDINATION WITH BRITISH GOVERNMENT,
BRITISH ARMY, AND U.S. AIR FORCE,
CONCERNING STRATEGIC DIRECTION AND
COORDINATION OF U.S. ARMY FORCES
IN GREAT BRITAIN.



AIR FORCE SERVICE CHANNEL

eral of USAFBI and Army member of the U.S. Military Mission in London—under direct control of the commanding general of U.S. Field Forces in the former capacity, of the War Department in the latter.⁹⁶ He continued also in charge of SPOBS, now vested with enlarged functions, and direct communications between that office and AAF Headquarters were authorized.⁹⁷ In his efforts to secure for Army air forces in the British Isles the organizational system he preferred, General Arnold had two avenues of approach. He could attempt to convince Chaney, now vested with full authority in USAFBI, either through the commanding general of U.S. Field Forces or by direct communication with SPOBS; or as Deputy Chief of Staff, he could try to influence the War Department, through the Chief of Staff, to change Chaney's directive. Neither maneuver was immediately successful. The confusion in Chaney's multiple command was enhanced by the shortage of trained staff officers, a phenomenon which was then common enough but which confirmed his resistance toward the multiplication of air headquarters in England.⁹⁸ There was, too, some of the perennial friction between air and ground officers in his staff. SPOBS had been made up largely of Air Corps officers⁹⁹ and Chaney himself was a command pilot of long standing, but initial contingents of the U.S. Army bomber command found some of his "G's" at USAFBI "not very friendly to Air effort."¹⁰⁰ As for the efforts to have Chaney's directive modified, time and the maturing of Anglo-American strategy were to lend point to Arnold's arguments.

In January 1942, Arnold submitted to GHQ a chart illustrating the organization he favored for USAFBI, and on the 21st received tentative approval subject to Chaney's concurrence.¹⁰¹ On the 26th, Arnold enumerated for Marshall the air units scheduled for the United Kingdom, both for 1942 and for eventual deployment, requesting that the War Department accept his chart as a "general guide" and activate the air force and constituent commands (bomber, interceptor, air base) which it called for.¹⁰² The several headquarters were ordered activated,¹⁰³ but the War Department was not yet fully committed to Arnold's plan.

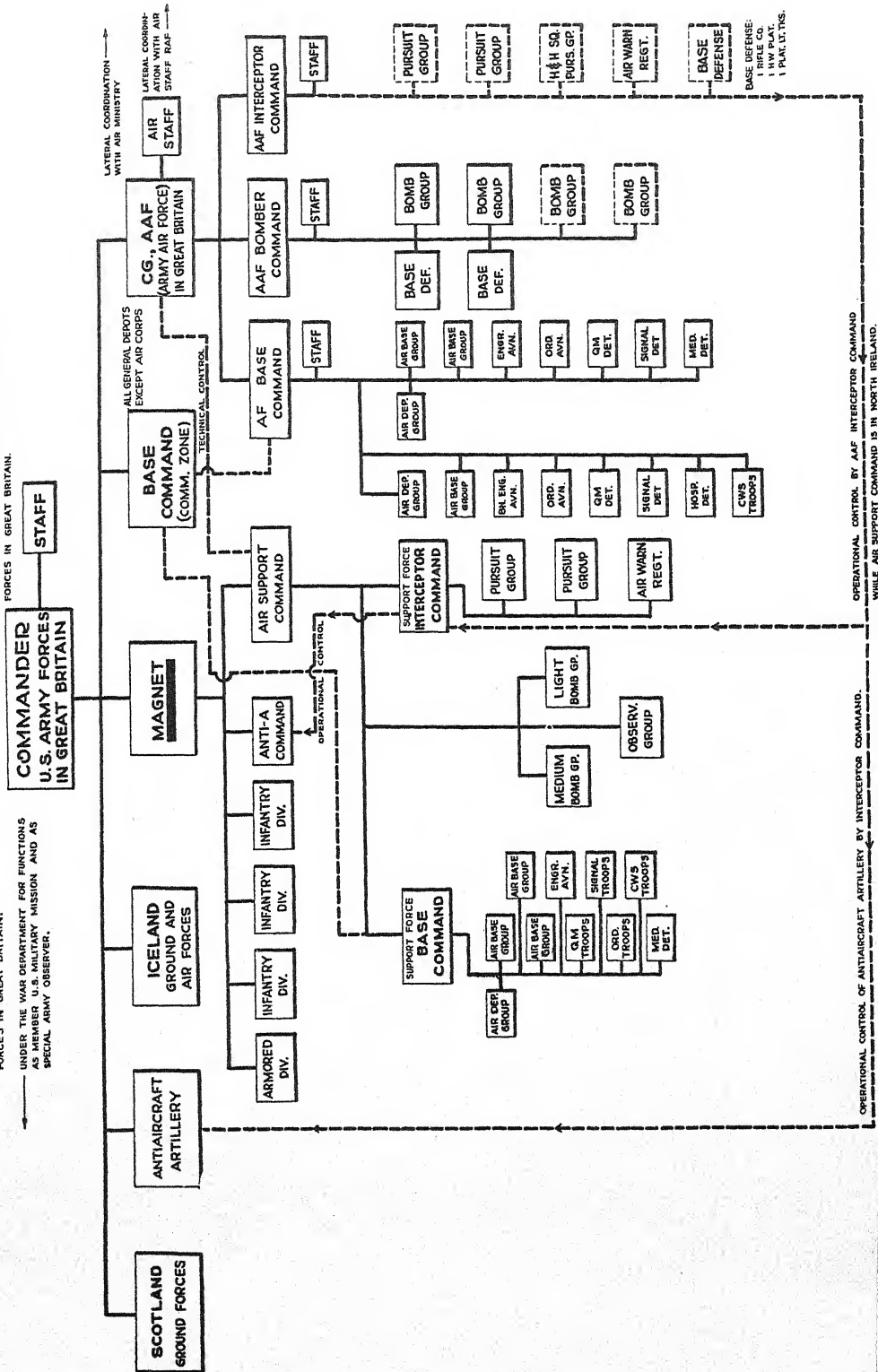
On 24 January, Arnold had informed Chaney of Marshall's tentative approval of an air force for USAFBI with Spaatz as commander and with three subordinate commands, suggesting that the force be located in the York area.¹⁰⁴ Chaney objected to that site, preferring

SCHEMATIC ORGANIZATION

U.S. ARMY AIR FORCES IN THE UNITED KINGDOM

LATERAL COORDINATION WITH BRITISH GOVERNMENT
CONCERNING STRATEGIC DIRECTION OF U.S. ARMY
FORCES IN GREAT BRITAIN.

UNDER THE WAR DEPARTMENT FOR FUNCTIONS
AS MEMBER U.S. MILITARY MISSION AND AS
SPECIAL ARMY OBSERVER.



the region around Huntingdon, which he had chosen in consultation with the British. As to the proposed air force structure, he thought that it might be suitable for a "virgin American theater" (i.e., the Caribbean) but "most undesirable" for the United Kingdom, and on the 30th definitely rejected it.¹⁰⁵ To reinforce his position, he requested GHQ to approve his own views for planning purposes, and on 3 February GHQ concurred.¹⁰⁶ Hence the plan accepted by the Combined Chiefs of Staff on 16 February for establishing the initial AAF contingent in England provided only for a bomber command subject to Chaney's control through such channels as he should designate; there was no mention of an air force headquarters or of other air commands.¹⁰⁷

In spite of this rebuff, Arnold was proceeding within the AAF on the assumption that his scheme would be adopted. On 31 January Brig. Gen. Ira C. Eaker had been designated bomber commander for USAFBI,¹⁰⁸ and Arnold on 6 February cabled Chaney that he was holding up action until Eaker had presented the AAF's views in London.¹⁰⁹ Eaker's orders stipulated that he should help prepare for the reception of his own command and of the air force which was to be "an intermediate headquarters between Bomber Command and the Theater Commander." His own informal notes suggest also that his verbal instructions called for similar preparations for an air base and an interceptor command.¹¹⁰ To reinforce the case for the last-named organization, Arnold opened on a new tack while Eaker was en route. Throughout, Chaney had argued against such a headquarters from the purely defensive role assigned to interceptor units in RAINBOW No. 5. Now, however, the Joint Chiefs were inclined to accept Arnold's suggestion that pursuit units be included as a part of the striking force,¹¹¹ and the latter was quick to take advantage of that change. On 12 February he listed for Chaney the combat units to be made available in 1942.¹¹² These included three pursuit groups to be used in conjunction with bomber operations and *not* for defense of England: Chaney must provide for their operational control without recourse to the RAF. Chaney's immediate reply was a request that he be allowed to settle in London all details concerning USAFBI air forces and their tactical use.¹¹³ The issues involved were not "details"; what Chaney in London seemed not to realize was that the AAF's struggle for control of its force in USAFBI merely paralleled the

struggle in Washington which was to result in the reorganization of the War Department on 9 March.*

Eaker arrived in London on 20 February and on the next day met with Chaney and his staff. That group of thirty-five included only four air officers; of the ground officers, Eaker found some who were "fair minded," others "definitely antagonistic to air forces and Air effort."¹¹⁴ One carried this hostility to the point of sending back to an Air Corps officer "all his staff work which mentions Army Air Forces, requiring them to be rewritten to eliminate the word 'Air.'"¹¹⁵ In such an atmosphere, Eaker could hope for little success. Reporting on the conference he wrote apropos of air organization:

I found a complete inflexibility of mind on that subject in the Chaney staff. They had made up their minds and no argument would change them in the slightest. I presented the arguments as strongly as I could but without the slightest effect. They are unalterably opposed to an Army Air Forces in Britain. They say that they are perfectly able to handle this in addition to their other duties and such an organization would make them merely rubber stamps. They consider that function their primary mission here and are not willing to surrender it.¹¹⁶

The last consideration was perhaps the deciding one. Under RAINBOW No. 5 the bomber command had been conceived as the most important element in USAFBI—indeed as the only one with an offensive mission—and it seems plausible to suppose that Chaney, an airman who had seen more of World War II bombardment than any of his colleagues, may have been unwilling to relinquish control of operations. That, at any rate, appears to have been Eaker's interpretation when he wrote:

I could not believe any man did not wish to be pushed up to a higher job, but I found one. They [USAFBI] are the Air Force Headquarters as they see it and they are reconciled and even believe in being subordinate to the British. I could not make them see that General Chaney should sit in at the Chiefs of Staffs' conferences and be coordinate with the highest military echelon, the Air Force Commander being at the R.A.F. level.¹¹⁷

Whatever the motivation, USAFBI firmly rejected Eaker's suggestions; when he asked for a headquarters for Spaatz, Eaker "was told quite definitely and pointedly, that he [Spaatz] was not coming and that there was not to be an Air Force Hq."¹¹⁸ The official reply to Washington, if less pointed, was equally firm. In a cable addressed

* See above, pp. 257-64.

to Marshall and Arnold, Chaney said flatly that he did not desire to change views expressed in his previous messages since consideration had been given to all points of the proposed organization.¹¹⁹

Blocked by this impasse in London, Arnold turned to higher authority. On 26 February he had written the Chief of Staff asking that Chaney be directed to organize USAFBI with correlative air, ground, and service force commanders responsible directly to the theater commander.¹²⁰ This memo was reviewed by WPD and, on 4 March, General Eisenhower, chief of that office, expressed his disapproval. The General Staff was then busy with its plans for a second front, and WPD was unwilling to risk the loss of British co-operation through an effort to impose on their existing organization a "US system of totally different type." Hence Arnold was informed that "General Chaney's telegram of January 30, on this subject, must be accepted, for the present, as conclusive."¹²¹ There was, however, this saving clause: the present decision would not preclude a later revision of Chaney's directive. Arnold could only point out the obvious fact that his organization, far from being "totally different," was remarkably similar to that of the British,¹²² and bide his time. So on 5 March he could not write "much of an official nature" to Eaker since affairs were "in too unsettled a state"; but he could suggest quietly that Eaker go on with his organizational planning on the assumption that things "will iron themselves out so that we will be entirely satisfied."¹²³

During March, while the War Department's invasion plans were shaping up, no change was made in Chaney's directive, but RAIN-BOW No. 5, which had been the basis of his plans, was rapidly crumbling away. On 19 March, Marshall wrote Chaney that he should provide for the reception of air and ground forces on a scale far beyond that previously scheduled. The "token force" had been scratched,¹²⁴ and within a week the Navy had abandoned its design for a base in Scotland, thus relieving USAFBI of the responsibility for air defense there.¹²⁵ The low priority given to air units for MAG-NET similarly modified plans for Northern Ireland.* In the face of these changes, Chaney's scheme to build his organization around territorial task forces had become obsolete.

On 30 March, Marshall informed Chaney that his command arrangements should be suitable for the employment of large forces,

* See above, p. 240.

including bombardment and pursuit aviation, in offensive operations. Specifically, he was asked to review in light of the new strategy the command structure outlined in his letter of 20 September and in his radio messages of 30 January and 27 February, and to suggest any modifications that seemed desirable.¹²⁶ If this was not an order to adopt Arnold's suggestion, the implications were plain enough. A week later, on the eve of his flight to the London BOLERO conference, Marshall cabled that Spaatz would organize and train an air force in the States, and later direct its operations under USAFBI.¹²⁷ This was definite. Whatever detailed shape Chaney's plan might take, its general outlines had been determined. While Marshall was in London, Arnold sent him, on 12 April, the air plan for BOLERO.¹²⁸ Already approved by WPD, this called for the establishment in England of the Eighth Air Force with its three constituent commands. Chaney held up his own arrangements "pending clarification" of the air force organization to be established in Great Britain,¹²⁹ but tacitly on 1 May and unequivocally on the following day he indicated that he had accepted Arnold's plan in all important respects.¹³⁰ Within a few days he had given practical demonstration of his concurrence by making arrangements for the actual siting of the headquarters of the Eighth Air Force and the VIII Bomber, Fighter, and Service Commands.¹³¹

Thus when Spaatz assumed command of the Eighth Air Force at Bolling Field on 5 May,¹³² the air organization for USAFBI had been determined along general rather than specific lines. He was anxious to clarify his responsibilities under the BOLERO plan, but was to find that no easy task. The commitment to BOLERO had perhaps tipped the scales in favor of Arnold's plan, but in some respects it had complicated the organizational problem. For one thing, the "balanced" air force contemplated for the invasion seemed to require a more elaborate internal structure: already the VIII Ground Air Support Command had been activated, on 28 April,¹³³ and other commands were to be added soon.* The invasion would call for much closer co-operation with surface forces than had the original concept of a bomber offensive, and in delineating the exact relations which the Eighth would have toward other U.S. forces and the RAF, provision must be made for two chains of command—that of the theater and that to be set up later for the invasion force. Ultimate decisions lay with the

* See below, p. 616.

CCS and the governments they represented, but initial planning was carried on independently by several staffs. The views of the Eighth Air Force were incorporated in a paper which Spaatz submitted to Arnold, requesting that he recommend it to the Joint Chiefs of Staff.¹³⁴ Spaatz' plan adapted to the European theater certain features of the new War Department structure, others from the Combined Chiefs of Staff organization. It placed the Army air component in the United Kingdom on a level with that of the British (i.e., Eighth Air Force = RAF; VIII Bomber Command = RAF Bomber Command); and while it provided for integral national forces each with its own conventional chain of command, Spaatz proposed that in matters pertaining exclusively to aviation, air commanders be allowed to settle problems directly and "on the spot" with their British opposite members.

Arnold approved this scheme in principle, and on the eve of his departure for the London conference of 26 May, suggested that it be co-ordinated with OPD * before it was sent up to the JCS.¹³⁵ OPD objected to a number of provisions, including the last named, and on 4 June submitted its own counterproposals.¹³⁶ Before these divergent views came to the attention of the Joint Chiefs, the latter had received from the British Chiefs of Staff Committee a memorandum on the over-all command for the ROUNDUP/SLEDGEHAMMER operations, with several alternative suggestions for control arrangements.¹³⁷ The Joint Chiefs found no one of these satisfactory, and they felt that the British had wrongly subordinated the main problem—combined machinery for control of the theater—to that of command for what was, after all, only a task force of unusual size. They felt also that the as yet unnamed supreme commander should have some voice in determining his own organization.¹³⁸ So it was that final decision was repeatedly postponed through June and July while the Combined Chiefs debated the relative merits of ROUNDUP and TORCH.¹³⁹ The choice of TORCH did result in the appointment of General Eisenhower as Allied commander as well as theater commander, but it was to be weeks before the air organization for TORCH was perfected. That involved the creation of a new air force, the Twelfth, and the story of its formation may be told more appropriately in

* On 23 March 1942, War Plans Division (WPD) of the War Department General Staff had been redesignated Operations Division (OPD).

another volume.* But in the meantime, before the diversion to Africa had won out over ROUNDUP, the Eighth Air Force had been incorporated into the theater command system.

On 8 June the European Theater of Operations was established by presidential directive and General Chaney, as commanding general of USAFBI, was designated as commander of all U.S. forces therein. His mission was to make preparation for and to carry on military operations against the Axis powers in the European theater in accordance with strategical directives issued by the Combined Chiefs of Staff and through the Chief of Staff, U.S. Army.¹⁴⁰ No specific reference was made to the air arm, but on 10 June Arnold sent to Eisenhower, and to Chaney and other commanders in the United Kingdom a description of the AAF's current concept of the air force organization for BOLERO during the period before the formation of the invasion task force.¹⁴¹ Substantially, this repeated the ideas expressed by Spaatz in May. Arnold expressed confidence that Chaney was "in full accord" with these views, but that was now a matter of little import. General Chaney's incumbency in his new office was brief—hardly more than an honorific reward for a year of service in England. He left for the States on 20 June¹⁴² to serve successively in several posts in the Zone of the Interior, and to finish the war as island commander of Iwo Jima. On V-J Day, probably few Americans remembered that General Chaney had once held, in another island, what was potentially the most important command in any theater. At any rate, it was left for his successor to establish the Eighth Air Force within the ETO structure.

When Generals Eisenhower and Spaatz arrived in London, they each bore a guide for that task in the form of their respective letters of instruction. Spaatz had received verbal instructions from Arnold and his letter was brief; dealing exclusively with channels of communication, it authorized direct correspondence between Spaatz and Arnold, Spaatz and Lord Louis Mountbatten (as chief of combined operations), and between the Eighth Air Force intelligence section and the Assistant Chief of Air Staff, A-2, in Washington.¹⁴³ Eisenhower's letter, more detailed, constituted the real directive under which the AAF was to operate in the United Kingdom.¹⁴⁴ All air units initially based there were to be integrated into the Eighth Air Force. General Spaatz as commander was to have his own headquar-

* Volume II.

ters and staff, and provision was to be made for bomber, fighter, ground air support, and air service commands. The basic role of AAF fighter units was to be direct support of bomber operations, and those units would not "be integrated with British fighter units employed in the defense of the United Kingdom, or into the British Fighter Command." The RAF might support U.S. bombardment missions, either by direct coverage or by synchronized fighter sweeps. Strategic control of AAF operations, vested in the British government, should "be construed to mean general strategic directives as to purpose and broad objectives," but it was not to include "designation of targets or tactical control of operations." For the air forces in the ETO, the broad objective was to gain "air supremacy over Western Continental Europe in preparation for and in support of a combined land, sea, and air movement across the Channel into Continental Europe." For the better accomplishment of this mission, General Spaatz should be given authority for direct communications and "judicial shortcuts" in dealing with the RAF, Fleet Air Arm, and Combined Operations Command.

This directive, as is apparent from its contents, was conceived under the influence of the SLEDGEHAMMER/ROUNDUP plans. TORCH was to divert to the Twelfth Air Force many of the units earmarked for the Eighth, and was to transfer to the former organization all responsibility for air-ground co-operation. Denuded of promised strength, the Eighth was to revert to the strategy contemplated before April 1942—an extended period of strategic bombardment in co-operation with the RAF. Under these conditions, relations with RAF Bomber Command were more important for the Eighth Air Force than were those with American ground forces. No radical change in the command structure was required. In a directive to Spaatz issued on 21 July, Eisenhower recognized the parallel position of the Eighth and the Royal Air Force, authorizing direct communication with the several commands of the latter and informal liaison with the Air Ministry.¹⁴⁵ In response, Spaatz submitted on 12 August a description of the internal organization of this force and of the actual machinery for co-ordination with the RAF in training and in operations.¹⁴⁶

Meanwhile, an important step was taken to reinforce the position of the Eighth Air Force within the ETO organization. Arnold, anxious that the AAF be properly represented in planning at the theater level, wrote Spaatz on 30 July: "In connection with planning,

I would like to have you see Eisenhower and get him to accept your headquarters as his air planning unit. Get him to use you in that way as he is the head of all US Army Forces in Europe. I want him to recognize you as the top airman in all Europe.”¹⁴⁷ This request was passed on to Eisenhower in a more formal communication, and on 21 August Spaatz was given additional duties as Air Officer for ETOUSA and head of the air section of its staff.¹⁴⁸ The actual representation at ETOUSA headquarters was to be through a deputy and assistants, but this measure assured to the Eighth Air Force an active participation in theater planning as earlier arrangements had for planning for the bomber offensive with the RAF.

Daylight or Dark?

As an argument in favor of his organizational scheme for the USAFBI air force, General Arnold in February 1942 reminded General Chaney that U.S. bombardment operations must be guided by American doctrines and principles, which were “entirely different” from those of the British.¹⁴⁹ In July, Air Marshal Sir Arthur Harris wrote to General Eaker: “I myself, and all the members of my command who have been in official or unofficial relations with you and yours, by now well appreciate that common doctrines prevail.”¹⁵⁰ During the five intervening months, neither air force had changed its ideas materially, though by the latter date there was more mutual understanding. The apparent contradiction in the two messages may be explained only by the fact that Harris referred to a general concept of air warfare, Arnold to the tactics by which that concept could be realized. That pattern—of agreement as to ends, dissent as to means—was so important a factor in the early operations of the Eighth Air Force that some explanation should be given here of the rival doctrines. Such an analysis will indicate that essentially Harris was right: that the area of agreement far outweighed in importance the doctrinal variations. Indeed, in respect to the role of air power in the war, opinions tended often to follow service rather than national lines of cleavage.

That fact should not be clouded by the apparent unanimity of opinion in the earliest Anglo-American war plans. The prominence given to strategic bombardment in ABC-1 reflected the current weakness of British and American forces. In March 1941 it was realized that Germany would long remain too strong to be attacked frontally;

the bomber offensive was viewed by most members of the Anglo-American chiefs of staff committees as a means by which the German war machine could be trimmed down to size. Strategic bombardment, then, was a form of attrition to be used simultaneously with others—the blockade, economic pressure through neutrals, subversive activities, psychological warfare, and commando raids.¹⁵¹ Developed in 1940 by the British, this concept of war was grounded in realistic appraisal of current capabilities. British manpower was pitifully weak in comparison with that of Axis and satellite nations, and imperial policies dictated a wide dispersal of forces as well as an impregnable defense of the home islands. Materiel losses sustained in the Battle of France had hardly been recouped by 1941, and a return to the continent in that year was unthinkable. The strategy was sanctioned, too, by ancient tradition. For centuries England in her European wars had relied on the Royal Navy, a small professional army, and the land forces of allies. In 1914-18 that tradition had been broken; large citizen armies had fought in France and Belgium, and the losses had been appalling. That experience had strongly affected British military thought between the wars,¹⁵² and lessons drawn therefrom seemed painfully substantiated by the fortunes of the British Expeditionary Force in 1940. The new strategy, then, was but a return to the old, with Bomber Command thrown in as the only offensive weapon. Even during the Battle of Britain, Churchill could tell the House of Commons that “there seems to be every reason to believe that this new kind of war is well suited to the genius and the resources of the British nation and the British Empire and that, once we get properly equipped and properly started, a war of this kind will be more favorable to us than the sombre mass slaughters of the Somme and Paschendale.”¹⁵³ It was in accordance with this view that heavy bombers had been given, next to the requirements for home security, highest priority in the British production program;¹⁵⁴ and that Bomber Command had stepped up the tempo of the operations begun on a modest scale in the summer of 1940. So when Hitler’s attack on the U.S.S.R. reduced the imbalance of forces, the new situation was viewed as an aid to current strategy rather than as an invitation to open a second front. This attitude is epitomized in a remark attributed to Air Minister Sir Archibald Sinclair, to the effect that “our two mightiest weapons are the Russian army and the RAF.”¹⁵⁵

It is significant that this strategy had evolved before there was any

prospect of direct intervention on the part of the United States. Hence, though the bomber offensive was treated as a prelude to invasion, it was conceived on a scale so huge as to obviate the mass battles of World War I. This was indicated clearly at the Atlantic conference of August 1941 when the British chiefs of staff expressed hope that the air war alone might bring about a German collapse and limit the role of ground forces to that of occupation troops; at worst, it would be a matter of mobile armored columns and local patriots.¹⁵⁶ This concept of war was common enough among airmen, but it was something new that it should have governmental support. It did not pass unchallenged. In succeeding months, the high priority given to heavy bombers and the declared intention of using them exclusively in a protracted strategic program evoked much argument in England. Critics complained of the RAF's failure to provide adequate close support for ground operations in Africa, of stress on high-level bombing to the exclusion of dive bombing, of the preference shown Bomber Command over Coastal Command and the Fleet Air Arm.¹⁵⁷ Public indignation over the escape of the *Scharnhorst* and *Gneisenau* from Brest on 12 February 1942 brought editorial agitation for the reorganization of the RAF and reconsideration of the question of high-level bombing.¹⁵⁸ RAF estimates of the efficacy of its efforts were sometimes challenged—as, for instance, in the highly publicized mission against the Renault works near Paris on 3 March.¹⁵⁹ In sum, the complaints followed the familiar pattern of objections to independent air force operations which had originally stemmed from interservice differences. The criticism was eagerly seized on by the German propaganda machine. Thus, in April, a fake English voice on one of Goebbels' radio programs announced:

We [British] should know better than anyone that the bombardment of towns can't bring the end of the war nearer. London withstood about as heavy a bombardment as could be launched.... The proper use of aircraft is to support land forces in the actual battle zone, and as the RAF isn't large enough to fulfill all its tasks, it should be reserved for this purpose only.¹⁶⁰

Neither honest criticism nor propaganda brought any serious revision of policy, nor apparently in majority public opinion. An air attaché on Chaney's staff reported in the same month that "the British public have an erroneous belief, which has been fostered by effective RAF publicity, that the German war machine can be destroyed and the nation defeated by intensive bombing."¹⁶¹ The favorable attitude

toward strategic bombardment was not strong enough to protect Bomber Command from numerous diversions from its primary objectives or from continued criticism. Just as the Eighth Air Force was moving into combat, Sir Arthur Harris felt it necessary to draw up an apologia for Bomber Command's achievements¹⁶² and to brand as "wanton propaganda" English efforts to belittle the results of its bombing.¹⁶³ To General Arnold he wrote: "We can defeat the enemy if we are not defeated by our friends."¹⁶⁴ The friends, one gathers, were in the other services.

When the U.S. chiefs of staff accepted the strategy of ABC-1, it was patent that in the event of an early involvement in war the United States could not immediately deploy large ground forces in Europe. This fact encouraged acceptance of a long prelude of strategic bombardment, but even in 1941 American leaders showed a more lively concern for the invasion of Europe than did the British. When the British presented their review of strategy at the Atlantic conference, the Joint Board found it to give "an undue importance to the probability of success solely through the employment of bombing offensives."¹⁶⁵ In this critique, the U.S. services presented a united opinion which was not apparent in their internal considerations. In the Joint Board Estimate of U.S. Over-all Production Requirements of 11 September, each of the services supported its request for materiel with a statement on strategy; that of the AAF (AWPD/1) was much closer to the British than was that of the Army or Navy. Acceptance of AWPD/1 would have given to heavy bombers the same sort of priorities they enjoyed in the British production program. To this the Navy was strongly opposed, and its campaign against acceptance of the implications of AWPD/1 was staunchly buttressed by references to British experience furnished by SPENAVO in London. Messages from that office cast doubts upon the results of the RAF bomber offensive and criticized the production priorities which made that campaign possible; they showed, too, a corollary desire to revise anticipated schedules for four-engine bombers in order to favor production of U.S. and British carrier-based planes.¹⁶⁶ From the evidence of a single isolated Bomber Command mission, Vice Adm. R.L. Ghormley, SPENAVO's chief, concluded that daylight bombing in force was unsound except at very short range under heavy escort, and that night bombing was ineffective and expensive.¹⁶⁷

These attacks on policies fundamental to AAF and RAF alike

brought vigorous rejoinders from the War Department and Air Ministry,¹⁶⁸ and the attacks were not at the time successful. A more dangerous threat to the program of strategic bombing as conceived in AWPDP/1, if not to production priorities, came from the efforts of the JCS to swing strategy over to a second front. This meant shortening rather than eliminating the bomber offensive, but inevitably it placed a new emphasis upon close support. The AAF supported the new trend, but with evident disappointment on the part of some of its members. On the whole, American airmen had been somewhat less outspoken than British in claims that air power alone might crush Germany, but this reflected, perhaps, their inferior position in the military organization rather than any serious misgivings. Eaker's reaction to BOLERO, as expressed in a letter of 26 April 1942, may be taken as typical:

After two months spent in understudying British Bomber Command it is still believed that the original all-out air plan for the destruction of the German war effort by air action alone was feasible and sound, and more economical than any other method available. General Arnold points out, however, that the required means is not now available, and time does not allow for the completion of this total air effort, hence it now seems wise to combine a limited air effort with ground forces to open up a Western European front.¹⁶⁹

When Spaatz arrived two months later, he could maintain in friendly debate with Harris the official American view that the invasion was necessary to victory, but it was essentially a question of whether strategic bombing would be the sole weapon or only the most important.¹⁷⁰ In neither case was there any doubt as to the crippling effects of an all-out attack on German industry. But as to the mode of attack there was still no unanimity of opinion.

When in 1941 the two air staffs began planning their combined attack on Germany, the RAF was already engaged in a bomber offensive over Europe with a carefully chosen system of objectives and a technique adapted to the means available. Then and later Bomber Command was forced, somewhat grudgingly and at times only through pressure from the government, to divert a considerable share of its effort to attacks on tactical objectives, often maritime in nature.¹⁷¹ But in mid-1941, preferred target systems consisted of transportation centers and the industrial communities surrounding them. This choice marked a change from earlier attacks on the oil industry, and the rationale of that shift was explained by the British at the

Atlantic conference.¹⁷² Current policy was dictated by the concentration of profitable targets within easy range in the Ruhr, by the tie-in between the blockade and the increased strain on inland transportation, and by the small force of bombers then available. The British professed, on humanitarian and military grounds alike, a distaste for indiscriminate bombing of nonmilitary targets; but they laid great stress on the effect of bombardment on civilian morale. They did not hope to frighten Germany into surrender, though they did believe the civilian temper less staunch there than in England; rather, they expected that the interruption of normal patterns of civilian life incident to prolonged bombardment would eventually disrupt German war industry.

To attack congested transportation centers surrounded by sprawling factory districts, they chose area rather than pinpoint bombing, and stray bombs—"overs" and "shorts"—were absorbed by adjacent residential districts. Because targets thus defined were large, and more importantly because German defense was rugged, attacks were delivered at night from medium or high altitudes. Bomber Command was proving that its Stirlings and Manchesters (as later its Lancasters and Halifaxes) could deliver a heavy load of bombs in the general vicinity of a transportation-industrial complex without prohibitive losses. In view of lower costs of construction, the greater bomb load, and the smaller crew demanded, the night bomber seemed more economical than the day. The clinching argument was the factor of lower operational losses.

Even before the war, RAF preference had run to night tactics for strategic bombardment, an attitude which must have influenced the design of British planes. Wartime experience had strengthened this view. The English, for all their stout reaction to the air blitz, had a healthy respect for the psychological effects of area bombing. They knew also the heavy cost of daylight bomber operations against constantly improved defenses, both from their defeat of the Luftwaffe in 1940 and from their own missions over the continent.¹⁷³ The RAF continued to deliver small daylight attacks against precision targets, but these were exceptional. The low-level raid on a Diesel engine factory at Augsburg on 17 April 1942 may be cited as an example.¹⁷⁴ Success in hitting a vitally important target may have justified the loss of seven out of twelve Lancasters dispatched, but the percentage was too high for routine practice. So while the British were willing to

consider the possibility of turning eventually to daylight operations, for the present they felt it expedient to bomb under cover of darkness.¹⁷⁵ The success of the thousand-plane saturation attacks against Cologne on 31 May and the Ruhr on 2 June 1942 offered grim evidence of what such tactics could accomplish.¹⁷⁶

American tactical principles, originally quite similar to those of the RAF, had been profoundly modified during the decade before Pearl Harbor. In 1941, AAF schools were teaching that strategic targets could best be destroyed by daylight precision bombing, delivered by compact formations of heavy bombers in level flight at high altitudes. The central idea was precision, which merely accentuated the principle of economy of force upon which the whole argument for strategic bombardment rested. If an enemy's ability to resist was to be attacked through his industry rather than through long and bloody battles with his armies, paralysis of selected key spots would be as effective as, and far cheaper than, total obliteration. Because this conclusion could be derived logically without reference to operational experience, it had been advanced at an early date. In 1918, for example, there had been a plan to hamstring such elements in the German army as depended on internal combustion engines by destroying the few factories producing magnetos.¹⁷⁷ In concept, this design was quite similar to the Eighth Air Force's campaign against the antifriction-bearing industry in 1943-44, and it illustrates the tendency in air warfare for theory to rush ahead of current practicability. For in 1918 there was not available the equipment requisite for precision bombing on the necessary scale. Even against existing defense measures, daylight bombing was considered prohibitively costly, and the Air Service, AEF, had accepted British operational principles when adopting the Handley-Page night bomber as the principal weapon for strategic operations.

To account for subsequent changes in doctrine, several factors may be suggested. There was in the United States a traditional reverence for marksmanship which went back to the squirrel rifle of frontier days when scarcity of powder and shot put a premium on accuracy. Even if the facts sometimes belied the tradition, it was an element of American folklore which could be taken over by analogy to the new weapon. Emphasis on precision was also an antidote to widespread antipathy toward attacks on "civilian" objectives.¹⁷⁸ Most important was the stress placed upon the airplane as the nation's best defense

against sea power, for a maneuvering ship could be hit only by the most precise bombardment. Mitchell preached accuracy in strategic bombing, but it was against naval craft that he scored his most spectacular successes. Until 1926 or later, the Air Service maintained the World War I distinction between day and night bombers as separate types, the former designed for use against ships or tactical targets on land, the latter for strategic objectives.*¹⁷⁹ In 1926 the Air Service Tactical School was still teaching, in respect to the latter: "While under favorable conditions day bombardment may be used, it is in raids on such objectives as these that night bombardment comes into its own."¹⁸⁰

Within a few years, the same school had gone over to the daylight precision idea. Its instructors had been led on by the logic implicit in their arguments for strategic bombardment,¹⁸¹ but their conversion came only as technological improvements gave some realism to the theories. Mitchell, as his critics liked to point out, had scored his hits under ideal conditions—at slow speeds and from low altitudes against defenseless ships at anchor. Antiaircraft artillery was but lightly regarded then, but even so it seemed unlikely that in actual combat level bombers could operate with impunity in daylight at altitudes of 3,000 feet or less. Dive bombing, early advocated by Mitchell and fundamental to Navy tactics, found little support in the Air Corps;¹⁸² level bombing to be reasonably safe in the face of heavy defenses must be conducted at greater speed and from higher altitudes, and to reach precision standards an improved bombsight was required. In the development of the plane and the bombsight around which Air Corps doctrines were to be built, it was the antishipping role rather than strategic bombing which was the decisive factor.

In October 1931, Army observers were greatly impressed with Navy tests against the USS *Pittsburg* with a new bombsight, the Mark XV. This had been developed by Mr. C.L. Norden, a civilian consultant whose earlier models had been in use by the Navy since 1920. The Chief of the Air Corps in 1932 requested the Navy to secure twenty-five Mark XV's for Army use.¹⁸³ Air Corps tests in the following year increased the initial enthusiasm, and seventy-eight additional items were ordered.¹⁸⁴ It is significant that the Mark XV was designed primarily for use against ships in motion and that its superiority over existing Army models (D-1, D-4, C-3) was most keenly appreciated

* See above, pp. 59-60.

in Hawaii, where the only likely bombardment targets were enemy ships.¹⁸⁵ In keeping with regular procurement policies which sought to secure alternate sources of supply, the Air Corps let contracts with the Sperry Gyroscope Company in 1933 for other improved models, the C-3X and C-4.¹⁸⁶

With the successful tests of the B-17 in 1935, the Air Corps had the materiel prerequisites for precision bombardment: a long-range plane of unusual stamina capable of flying above the effective range of flak, and bombsights of unrivaled accuracy. The relatively small bomb load of the plane enhanced the need for accuracy. During the next few years, tactical procedures were refined, with special emphasis on pattern bombing from tight formations. And as the GHQ Air Force shifted its interest more and more toward counterair activities and industrial objectives, tactics originated for strikes at shipping were adapted to land objectives. Scores achieved in training were impressive. This accuracy was exaggerated in the legend of "pickle-barrel" bombing which arose during that period, to the later discomfiture of the AAF. But the results were clearly superior to those obtained by European air forces during the first two years of war, a fact which seems to have been accepted by the RAF. The moot point in AAF-RAF debates was whether comparable accuracy could be maintained, within acceptable attrition rates, under combat conditions in the ETO.

The issue was squarely faced in AWPDP/1. According to the detailed analysis of the bomber campaign against Germany contained in that plan, the AAF was to avoid to the extent possible diversionary operations of the sort which were weakening Bomber Command's offensive. The full weight of American attacks should be concentrated against a limited number of designated targets:¹⁸⁷

Intermediate Objectives:	30 aircraft and light-metals industries
Primary Objectives:	50 electric power plants
	47 transportation centers
	<u>27</u> petroleum and synthetic oil industries

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Some of the objectives listed were already under night attack by the RAF, but to AWPDP they appeared as precision targets to be destroyed by approved AAF methods. Only when the industrial fabric of Germany began to crack should the AAF turn to area bombing of cities for morale purposes.¹⁸⁸

After analyzing German air defense, the authors of AWPD/1 came to the conclusion "that by employing large numbers of aircraft with high speed, good defensive fire power and high altitude, it is feasible to make deep penetrations into Germany in daylight."¹⁸⁹ This was predicated upon the belief that U.S. bombers, initially B-17's and B-24's, subsequently B-29's and B-32's, could beat off attacks from fighters currently employed by the GAF. To cope with improved German models in the future, the AAF should begin immediately development of an escort plane with speed somewhat superior to that of heavy bombers, with equal range, great firepower, and heavy armor.¹⁹⁰ Several of the authors of AWPD/1 had observed the air war in England; they had access to RAF intelligence; they utilized AAF bombing records to calculate the weight of attack needed to destroy each target. But their estimates of the capabilities of the B-17 and B-24 under war conditions were unsupported by practical experience. Paradoxically, it had been the RAF, not the AAF, who had flown U.S. heavy bombers in combat, and the results had done little to convert British opinion.

During the spring of 1941, some twenty B-17C's were delivered to the RAF. Initially, British aviation journal gave the "Fortress One" an enthusiastic welcome¹⁹¹ and RAF leaders regarded it "as a very fine aeroplane."¹⁹² To take advantage of its peculiar virtues, it was decided to employ the B-17 in very high-altitude daylight missions.¹⁹³ Such operations under the RAF control system required numerous modifications for the plane—about forty in all—and special training for the crew. The mechanical changes were delayed, and indoctrination of crews by AAF officers stationed in England was all too brief.¹⁹⁴ On a trial run on 8 July, made before modifications were complete, three Fortresses were dispatched to bomb the naval barracks at Wilhelmshaven from 30,000 feet. Engine trouble forced one plane to attack a secondary objective; the other two failed to hit the target and when attacked by GAF interceptors were unable to return their fire.¹⁹⁵ Regular missions began with participation in a great daylight attack on naval ships at Brest on 24 July;¹⁹⁶ in general, they were as unsuccessful as had been the maiden attempt. By 12 September, twenty-two raids totaling thirty-nine sorties had been dispatched; eighteen planes had aborted, two had bombed secondary targets, so that only half had reached primary objectives. Two were shot down and two so badly damaged that they crashed in landing; total combat

and operational losses included eight of the twenty Fortresses, and others were grounded for want of repairs. It was dubious that two of the 1,100-lb. bombs customarily used had hit assigned targets, and not an enemy fighter had been destroyed.¹⁹⁷ One long ton of bombs delivered at a cost of eight B-17's was an expensive mode of warfare.

In the face of these failures, British enthusiasm for the Fortress One cooled rapidly and RAF skepticism as to the feasibility of American tactics seemed confirmed. One AAF observer noted that "while the first British reaction was one of confidence in the B-17C because of its ability to withstand gunfire, this original confidence has been dissipated."¹⁹⁸ In retrospect, the failure is easy to explain. The B-17 had been designed to operate at 25,000 feet, and while there was in America some talk about stratosphere bombing, training had been at designed altitude or lower. The British had taken the plane much higher; in one mission they bombed from 39,200 feet, and never below 30,000. By AAF standards they had greatly overloaded the plane. Failures in hastily modified oxygen and heating systems had lowered crew efficiency. Guns had frozen and windshields had frosted, and when German fighters had attacked—at altitudes up to 32,000 feet—the Fortress had lacked speed to escape, firepower and visibility to fight back.¹⁹⁹ Goebbels had in derision labeled the planes "Flying Coffins." The RAF had never sent the B-17's out in formations large enough to insure a proper bomb pattern—four was the maximum effort—and bombardiers, though experienced, had not received sufficient training with the Sperry bombsight, which for security reasons had been substituted for the Norden.²⁰⁰

The experience accorded a handful of B-24's also delivered in England in the spring of 1941 had been no more gratifying: good initial publicity had been followed by undue delay in modification and a preference on the part of the British for using the Liberator as a transport or sea-search plane.²⁰¹ General Arnold was not unnaturally concerned over reports of the manner in which B-17's and B-24's were being handled in England when heavy bombers were needed desperately for the expanding AAF. Unfavorable British comment came most inopportunistly while the AAF was working strenuously to secure, in the Victory Program, a top priority for its heavy bombers. Too much adverse criticism might discredit the equipment as well as the doctrines of the AAF. As an air officer in SPOBS put it, "The success or failure of the initial results of the B-17's bombing

operations will have an effect, far in excess of its actual operational importance, on the attitude of the RAF, the British, and the American people toward the B-17 as a fighting plane.”²⁰²

On inquiry, Brig. Gen. Ralph Royce, air attaché in London, confirmed disquieting reports which General Arnold had received: that the RAF had been forced by the British government, for political and publicity reasons, to use the Fortresses; that crew training had been inadequate, especially in reference to use of the Sperry sight; and that maintenance had been slow and inefficient.²⁰³ Undoubtedly there was something to be said on both sides. The Americans saw chiefly the negligence in maintenance and the failure to follow AAF procedures in operations. The British saw rather the mechanical failures, the limited armament, and the losses. Fundamentally, the difficulty lay in the fact that no one in the RAF was eager about the planes.

A typical expression of British opinion may be found in reports by experienced RAF pilots invited to the States as consultants in October.²⁰⁴ They thought that the B-17 and B-24 might be suitable for service in the Pacific, but that they were too lightly armed for daylight missions over Germany—in fact, they called both “night bombers”! Because of its heavier bomb load, they preferred the B-24 to the B-17 but considered both inferior to British heavy bombers. The pilots spoke of the ruggedness of the B-17 under fire, but they believed that no bomber could stand up against German defenses in the daytime.²⁰⁵ So firmly ingrained had this opinion become when the United States entered the war that Air Chief Marshal Sir Wilfred Freeman, Portal’s deputy, proposed that the B-17 and B-24 be modified for night operations and be used according to British tactics when the AAF should be sent to England.²⁰⁶ That suggestion received little support in the Air Staff at Washington. “This must not,” commented one member, “through frequent repetition, lead us to favor area bombing against precision bombing which accomplishes the strategic result with fewer airplanes and fewer crews.”²⁰⁷ Nevertheless, RAF experience with U.S. heavy bombers suggested improvements, if not radical changes, in both aircraft and operating techniques.

While AAF doctrines were thus under fire, they received a new endorsement from General Chaney. On 5 September 1941 he completed an analysis of the results of German bombardment in Britain during 1940.²⁰⁸ The Luftwaffe’s failure to crush British industry and morale he attributed to German errors rather than to any weakness inherent

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in air power. Goering had never put enough bombers over England, nor had he concentrated his forces on the proper targets. Conversely, Chaney believed that an allied air force, if sufficiently large and properly handled, could knock Germany out of the war or at least make easy the final invasion. This would require choice of appropriate strategic targets and prolonged concentration on each until it was totally destroyed. Most of the targets were relatively small and could best be attacked by precision techniques. That meant daylight bombing, which in turn meant heavier losses. Those losses might be held to a figure commensurate with results only if AAF bombing were highly accurate.

Accuracy indeed was the crux of the problem. American and British doctrines could be evaluated according to a simple formula in which the basic factors were: $\frac{\text{Bombs on target}}{\text{Bombers and crews lost}}$. Presumably

both factors would be greater by day than by night, but in their proportion lay the whole argument for or against the AAF theory. In spite of British and German experience, Chaney thought it possible to conduct a decisive daylight bomber offensive in Europe, provided operations were carried out on a massive scale and provided requisite improvements be made in equipment, training, and tactics.

Chaney's comments on bombardment "under existing war conditions" elicited from Arnold promise of "vigorous action,"²⁰⁹ which most immediately took the form of a reappraisal of existing equipment and techniques. To cast some light on the controversial question of whether the B-17 and B-24 could approach German targets by day consistently enough to accomplish the mission assigned them in AWPD/1, an analysis was made of fighter-bomber engagements in the European theater.²¹⁰ The findings seemed to justify some of the RAF complaints. Most profitable strategic targets lay beyond the range of fighter escorts. To escape German flak, it was necessary to operate at altitudes which made it very difficult to maintain the close formations prescribed by the Air Corps. Essentially, then, the heavy bombers should be defensively self-sufficient, and whereas the B-17 had exhibited great endurance under fire it had also showed little capacity for inflicting damage on attackers. Hence, a more intensive study was necessary to determine what improvements in armament were needed.

The Air Staff was not prepared to abandon faith in defensive for-

mations but immediately began an investigation of means to increase the firepower of U.S. bombers. After making a detailed comparison of the British Stirling and Manchester with the Fortress One, AWPD recommended that the B-17 and B-24 be equipped with ten machine guns, mounted in turrets where possible. This followed RAF practice as to number, but the guns were to be heavier, of .50 caliber rather than .303. Better equipment for oxygen and heating should be developed, and a board of officers should be named to draw up characteristics for a long-range escort plane.²¹¹

The recommendation for increased armament was followed immediately, and the B-17E—the first model to be used in combat by the Eighth Air Force—was the most heavily armed bomber in the theater. The design for the escort plane was slower in its evolution. The failure to have developed such a plane was the most serious flaw in the AAF's program, and it is difficult to account for. Again, the fact that national defense rather than strategic bombardment against European powers had been the prevailing influence in the twenties and early thirties must have been important.²¹² The effect of Douhet's writings at the Air Corps Tactical School has been referred to above,* and Douhet taught that heavily armed bombers in mass formations could operate by day against fighter defense.²¹³ Whatever the reason, the AAF was approaching a major war without a long-range escort for its bombers.† The type of plane recommended in AWPD/1 to remedy this lack was more akin to a modified bomber than to any existing pursuit model.²¹⁴ Eaker, on a mission to England in September 1941, secured information which seemed to corroborate this judgment,²¹⁵ and eventually such an expedient was followed. Almost a year later, in August 1942, a board headed by Brig. Gen. A.J. Lyon submitted a plan for modifying the B-17 and B-24 into "destroyer escort planes."²¹⁶ That suggestion was followed, and the resulting YB-40 and YB-41 were to have a brief and unhappy trial in the ETO. But when war came it was apparent that our early bombardment operations would be run without benefit of escorts over the target, a fact which accentuated the need of improved techniques.

Research toward that end had paralleled those dealing with equipment. A board had been established in July 1941 to evaluate bombing accuracy in the AAF, and in response to Chaney's recommendations,

* See above, p. 51.

† For one possible explanation, see above, pp. 64-65.

its functions were extended to include an investigation of "poor bombing results" in the European theater. From midsummer until the end of 1941, the board continued its study of bombardment in England and in the United States. The analysis of RAF and Luftwaffe operations did little to change current unflattering estimates, but the report on AAF bombardment rendered on 2 January 1942 left little cause for complacency.²¹⁷ The remarkable scores achieved by the AAF had been made under ideal conditions: experienced crews flying in the cloudless—and flakless—skies of the American Southwest. AWPDP/1 would have to be accomplished by crews trained in the hastily expanding air force. Bombing accuracy at present was far below the capabilities of existing equipment—as, in fact, it was to be throughout the war. Few crews were sufficiently trained for night bombing to justify adopting RAF practice, and indeed there was "no bombardment unit of the Air Forces ready for combat operations in any theater without a minimum of three months additional training."²¹⁸ This was a serious condition in an air force already at war. The board suggested certain remedial steps in regard to training and recommended that no unit be committed to an active theater until it had demonstrated its proficiency by specific achievement tests.

The exigencies of war made this last item impractical, but in general the report was enthusiastically received.²¹⁹ On 26 February, Arnold established the Bombardment Tactical Committee consisting of five bombardment experts, and specialists on antiaircraft artillery, radar, and meteorology. The committee was charged with "preparing the doctrines, tactics, and technique of employment of air forces in the European theater," and of making recommendations for improvements in training and equipment necessary thereto.²²⁰ In the meanwhile, work toward the same ends had begun in the theater.

General Eaker had arrived in England on 20 February to prepare for the reception of the USAFBI bomber command. Among other duties he was charged with studying the doctrines and operational procedures of RAF Bomber Command,²²¹ and he had been advised by Spaatz to exhaust fully the possibilities of daylight bombing. His long report of 20 March contained, therefore, a critique of British doctrines and an estimate of AAF capabilities.²²² Several weeks of observation had given Eaker a healthy respect for Bomber Command's work, and he tended to justify rather than condemn their choice of night operations. With forces inadequate to the primary

mission, Bomber Command's efforts had been diffused in attacks on nonstrategic targets so that it had been impossible to accept the heavier losses which daylight operations would involve. Economy in materials and in production man-hours favored the night bomber; easier maintenance, smaller crews, and, above all, smaller losses, favored night operations. Just as the British had earlier admitted that they might eventually turn to day bombing, so Eaker was willing, if necessary, to give British methods a trial. AWPDP/1 had assumed that toward the end of the bomber campaign the AAF might turn to area bombing of cities to give the *coup de grâce* to German morale, but Eaker was interested in the more immediate future. So soon as a satisfactory flame dampener could be developed for his heavy bombers and crews could be specially trained, he proposed to use his force "both day and night."

This was in keeping with the experimental tone which pervaded the whole report. Eaker was keenly aware of the great fund of experience which the RAF had built up in two and a half years of war, and he hoped to profit both from their successes and from their errors. But he was still convinced that the AAF's chief contribution would be through operations of the type for which its equipment and training had been designed. Daylight bombing would make navigation and location of targets easier. Operational, as opposed to combat, losses would be fewer. But, above all, it was only by following approved AAF practice that bombardment could approach precision standards. This would require, in addition to skillful bombardiers, intensive training in evasive action, formation flying, and gunnery. It would require, too, an adequate force, regular replacements, and high morale. In the initial stages operations should be of shallow penetration only so that some protection might be had from fighter escorts with limited range, and targets and methods of attack should be varied constantly to confuse the defense. This applied to the Anglo-American combined effort as well, and Eaker stressed the positive value of a co-ordinated day-night attack on Germany. Such a program would abate congestion in British skies, already overcrowded with planes. It would allow the AAF and RAF to specialize on the type of targets and tactics for which each was best qualified. And by keeping German defenses on the alert around the clock, the combined attack in the long run would reduce both American and British losses.

Eaker's report gave then an affirmative, if cautious, reply to Spaatz' question as to the feasibility of daylight operations. The report was favorably received in Washington,²²³ and when Spaatz arrived in England in mid-June he was still inclined to accept its verdict. It is true that the adoption of BOLERO had involved a sharp reorientation in air strategy: the long-term bombardment campaign had become less important than counterair activities and close support. Thus, the mission assigned to the Eighth Air Force by General Eisenhower on 21 July was, in collaboration with the RAF, "to initiate immediately the maximum degree of air operations with a view to obtaining and maintaining domination of the air over Western France by 1 April 1943 and be prepared to furnish the maximum support to the forward movement of U.S. Army ground forces by late summer 1942."²²⁴ Yet while Spaatz and his staff were preparing to execute that mission, the heavy bomber program as originally conceived was not entirely abandoned, and the change from BOLERO to TORCH released the Eighth Air Force from any immediate concern with close support for a cross-Channel push. Thus, on 1 August, Eaker could describe the mission of the VIII Bomber Command in terms wholly consistent with those of his 20 March report: the destruction of carefully chosen strategic targets. The experimental nature of the task was still evident in the directive he issued: "A subsidiary purpose of our early bombing operations will be to determine our capacity to destroy pinpoint targets by daylight accuracy bombing and our ability to beat off fighter opposition and to evade antiaircraft opposition."²²⁵ Because of diversions of bomber units to TORCH and the Pacific, the "subsidiary purpose" was to be the main purpose for almost a year.

Eaker's statement implied that the tests would involve penetration by unescorted bombers, and indeed until fighter range could be stepped up appreciably any missions into Germany proper must be flown by the heavies alone. But there was no intention of throwing the first handful of B-17's in a daylight stab at Berlin: initial efforts should be exerted tentatively within fighter radius of southeast England. Throughout negotiations with the British, Arnold, Spaatz, and Eaker had resisted all attempts to integrate U.S. pursuit units with RAF groups charged with defense of England; AAF fighters should be a part of the striking force with the primary duty of escorting bombers.²²⁶ But in August it was obvious that for want of fighter strength RAF Fighter Command would have to furnish most of the

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support initially. Essential agreement as to policy in this respect was reached by 20 August, three days after the VIII Bomber Command had flown its first mission. The document, which reached its final form on 8 September, is worth quoting in full:

Joint American/British Directif On Day Bomber Operations Involving Fighter Co-Operation

AIM

1. The aim of the day bombardment by Allied Air Forces based in Great Britain is to achieve continuity in the bombing offensive against the Axis.

ALLOCATION OF RESPONSIBILITY

2. The primary instrument for night air bombardment is the British Bomber Command. Day bombardment will be the primary responsibility of the 8th Air Force.

METHODS OF ACHIEVING THE AIM

3. Night bombardment methods will remain as defined in present Air Ministry directifs to the British Bomber Command. The method of achieving the aim of day bombardment is by the destruction and damage of precise targets vital to the Axis war effort.

DEVELOPMENT OF DAY OFFENSIVE

4. The day bomber offensive is to be developed in the following three phases:—

(a) Phase 1

American day bomber forces under British fighter protection reinforced by American fighter forces are to attack suitable objectives within the radius of action of British fighter cover.

(b) Phase 2

American day bomber forces under British and American fighter protection are to attack suitable objectives within the radius of action of British and American fighter types. In this phase, the direct protection of the bomber forces is to be provided by American fighter forces. British fighter forces are to be used principally for diversionary sweeps and withdrawal cover. During this phase the range characteristic of the American type fighter aircraft is to be exploited to increase the depth of penetration of the bomber force and also to widen the frontage of attack. It will be the responsibility of the 8th Air Force to develop the tactics of deep penetration of the enemy day fighter defence.

(c) Phase 3

The 8th Air Force will develop its full day bomber offensive receiving such support and co-operation as may be required from the British short-range fighter force.

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OBJECTIVES

5. Objectives suitable for the day bomber offensive under Phases 1 and 2 are listed in the attachment hereto. The target list for Phase 3 will be issued later.

ROLE OF BRITISH DAY BOMBER FORCE

6. During the development of the day offensive, British day bomber forces are to be used in the secondary role to add weight to British diversionary operations and to maintain the attacks during periods unsuitable for the operation of the American heavy day bombers.

MACHINERY FOR IMPLEMENTING THE PLAN

7. During Phase 1, it will be the responsibility of the Commanding General of the American Bomber Command to initiate offensive operations, making preliminary arrangements for fighter co-operation with the Commanding General, the American Fighter Command. It will be the responsibility of the latter to ensure full consultation with the Air Officer Commanding-in-Chief, Fighter Command. When the general plan is settled, it will be the responsibility of the Air Officer Commanding-in-Chief, Fighter Command to nominate the British Fighter Group Commander, who is to draw up the detailed fighter plans, reinforcing the Fighter Group as necessary in conjunction with the Commanding General, American Fighter Command in respect of American pursuit reinforcements. Thereafter, detailed planning and the conduct of the fighter operation will be the responsibility of the Commanding General, American Bomber Command, and the British Fighter Group Commander concerned.

8. When Phase 3 is reached, it will be the responsibility of the Commanding Generals of the American Bomber and Fighter Commands together to make the general and detailed plans and to conduct the operations under the direction of the Commanding General, 8th Air Force. It will be the responsibility of the Commanding General of the American Fighter Command to arrange with the Air Officer Commanding-in-Chief, Fighter Command for such ground facilities and fighter co-operation as may be required from the British Fighter Command.

9. The Air Officers Commanding-in-Chief, Bomber, Fighter and Coastal Commands, and the Commanding Generals of the American Bomber and Fighter Commands will at all times keep each other informed of operational intentions and together make such adjustments to plans as may be necessary to ensure proper co-ordination.

10. At some moment during Phase 2 it will be necessary to change from the co-ordination machinery for Phase 1 to that agreed for Phase 3. The moment of change-over will be decided by the Commanding General, 8th Air Force and the British Air Ministry (A.C.A.S.(Ops)) conjointly, having regard to the available strength of American pursuit forces available which are armed with American type fighters, and the degree of operational experience which they have acquired.²²⁷

The Joint Directif gave no indication that the RAF had been convinced of the soundness of American doctrines—only that the doctrines' trial by wager of battle would be given British support. The document was, however, indicative of the mutual respect that characterized the relations of the two air forces. This attitude was not always appreciated by the public. Newspaper stories tended to magnify honest differences of opinion into serious disputes, and the Eighth's long delay in getting into action seemed to lend substance to this view. On 8 August the *New York Times* published an article by John MacCormac under the head "British-U.S. Rift on Planes Holding Up Air Offensive." The gist of the argument was that American co-operation in the bomber offensive was behind schedule and perhaps permanently impaired because of serious disagreements concerning U.S. heavy bombers and bombardment theories—specifically, "because of British-American inability to agree on methods or objectives." The article showed little understanding of the situation. Only a week before, Eaker had written Sir Arthur Harris, "I shall continue to look upon you as the senior member in our firm—the elder brother in our bomber team,"²²⁸ and Harris had replied: "I am personally in the fullest agreement with the methods of cooperation which you propose and supremely confident that, at least as long as we retain our respective assignments, no difficulties of either an operational or a personal nature can conceivably arise between us."²²⁹ The VIII Bomber Command got off to a late start not because of quarrels over the teacups with the RAF, but because of difficulties in logistics and training which will be described in the next chapter.

The *New York Times* story, because it had appeared in so influential a journal, was repudiated by Eisenhower and Spaatz.²³⁰ It was not the last in which rivalry between AAF and RAF was played up. A month later Spaatz condemned the American tendency

to belittle the RAF and their bombing effort. This, in spite of the fact that . . . the only force that is pounding hell out of Germany is the RAF. This does not mean that I am an enthusiastic supporter of all they do. They were wrong in their analysis of what can be done with daylight bombing but they have the benefit of a hell of a lot of experience, and when they analyze anything it is with the background of that experience.²³¹

When Spaatz wrote this, the Eighth Air Force had received its baptism of fire and he could himself draw on a modicum of experience. But in spite of the dramatic success of the initial B-17 missions, high-

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lighted by the controversy in the press, it was to be months before VIII Bomber Command had thoroughly demonstrated the soundness of its doctrine of daylight bombing. As one of its officers wrote in retrospect, "There were, frankly, many times when we seriously doubted the practical adherence to such a high-flown motto."²³²

CHAPTER 17

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ESTABLISHMENT OF THE EIGHTH AIR FORCE IN THE UNITED KINGDOM

DESTINED to become the major instrument of American air power in the war against Germany, the Eighth Air Force from its very inception was intended for action against the European Axis. Originally, however, it had not been assigned the mission of strategic bombardment. Its roots were embedded in the projects for the invasion of Northwest Africa (GYMNAST and SUPER-GYMNAST) considered by the ARCADIA and post-ARCADIA conferences in December 1941 and early 1942. The decision to organize a task force known as the Mobile Reserve Corps, under the command of Maj. Gen. Lloyd R. Fredendall, to carry out GYMNAST in the event of a firm commitment to that operation, made inevitable the planning and organization of its air element. Accordingly, on 2 January 1942, General Arnold directed that an air task force be established for the purpose under the command of Col. Asa N. Duncan, then commanding the III Air Support Command.¹ First designated the Fifth Air Force, the new organization within a few days received instead the designation of Eighth Air Force because of a plan to authorize the activation of a Fifth Air Force * in the Far East.²

As originally conceived, the Eighth Air Force consisted of a headquarters, bomber and interceptor commands, and a wing headquarters to be employed as a service command. Its constituent units were one medium bombardment group, two pursuit groups, one observation group, three air base groups, and one air depot group. Already selected

* First assigned to the Far East Air Force, the designation would not be identified with the American elements of the Allied Air Forces in Australia and New Guinea until 3 September 1942.

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by 8 January for assignment to the new air force were the 17th Bombardment Group (M), the 48th Bombardment Group (L), the 20th and 52d Pursuit Groups,* the 68th Observation Group, and the 7th Photo Squadron. Additional units not then available were to be activated by the commanding general of the Air Force Combat Command (AFCC), under whose direction the organization and training of the Eighth Air Force was placed.³ On 19 January, the War Department ordered that the AFCC activate the headquarters and headquarters squadrons of the Eighth Air Force, VIII Air Force Base Command, VIII Bomber Command, and VIII Interceptor Command.⁴ Meanwhile, the Air Staff planned that the several units would move into a concentration and training area within the United States on or about 1 February. Task Force GYMNAST had been accorded a priority D rating by the AAF, with three other air task forces scheduled ahead of it.^{† 5}

The AFCC delegated to the First and Third Air Forces the actual task of establishing the major headquarters units.⁶ The Headquarters and Headquarters Squadron, Eighth Air Force was activated by the Third Air Force on 28 January at Savannah Army Air Base in Georgia. As in the case of the commander, Colonel Duncan, most of the personnel was drawn from the headquarters of the III Air Support Command. At the same time, the III Air Force Base Command supplied the initial personnel for the VIII Air Force Base Command.⁷ The VIII Bomber Command was activated at Langley Field, Virginia, by the First Air Force on 1 February, and on the same day the VIII Interceptor Command was activated at Selfridge Field, Michigan. According to plan, the VIII Bomber Command was promptly moved to Savannah and the VIII Interceptor Command to Charleston, transfers which had been effected by the middle of February.⁸ As these moves indicate, the southeastern states of North Carolina, South Carolina, and Georgia had been selected as a concentration and training area, where units initially were stationed on bases and airports at Savannah, Charleston, Wilmington, Columbia, Florence, and Augusta. The plan called for the new air force to remain under the control of the commanding general, AFCC until the

* Pursuit units were redesignated "fighter" in May 1942.

† On 20 January, the task forces with higher priorities were Task Force X (Australia), Task Force FIVE ISLANDS (South Pacific), and Task Force BR (United Kingdom).

date of embarkation or until the beginning of training with the Mobile Reserve Corps. It was attached for administration and supply to the Third Air Force,⁹ which continued to act as a parent to most of the units of the infant Eighth until their departure for the United Kingdom several months later.

By 12 February it had become apparent to Colonel Duncan that the 24,125 men and 621 aircraft planned for the Eighth would not be adequate to carry out the mission intended for it under GYMNAST. He recommended, therefore, that his force be augmented by the addition of three heavy bombardment groups, one medium bombardment group, and three pursuit groups.¹⁰ But such an augmentation of strength would have required the diversion of combat units intended for other task forces. The Air War Plans Division (AWPD), therefore, on 25 February recommended instead the elimination of GYMNAST from current projects.¹¹ The project had been periodically deferred during February, largely because of the demands made by our hard pressed forces in the Pacific, and early in March the Combined Chiefs took under consideration a recommendation that SUPER-GYMNAST be continued as an "academic study" only.¹² Until it was revived some months later under the name of TORCH, the North African venture ceased to affect the fortunes of the Eighth Air Force.

As though to indicate the trend of policy, the Eighth already had sustained a practical reduction in strength. On 19 February it had been instructed to make available to Lt. Col. James H. Doolittle twenty B-25's with combat crews from its 17th Bombardment Group for the special mission to be led by him against Tokyo.¹³ During March, intensive training of VIII Bomber Command units was interrupted further by the imperative demands of the antisubmarine campaign in the Atlantic; and while planes and crews of the 17th Group participated in the defense of the southeast coast of the United States, an additional sixty-seven pilots of the VIII Bomber Command were on special duty outside the continental limits of the United States.¹⁴ Finally, at the end of March all combat groups then assigned to the Eighth Air Force passed from its control to that of the Third Air Force in an administrative shift preparatory to the assignment of a new mission and of new units for its fulfillment.¹⁵

Abandonment of GYMNAST had left the Eighth Air Force uncommitted to any operation. Maj. Gen. Carl Spaatz, commanding

general of the AFCC and commanding general-designate of the contemplated Army Air Force in Great Britain (AAFIB), had previously sought to have the Headquarters and Headquarters Squadron of the AFCC transferred intact to the AAFIB, in the hope of providing at least a head for that heretofore incorporeal organization.¹⁶ A decision to assign the AFCC personnel to AAF Headquarters precluded this move, but General Spaatz was quick to seize the opportunity presented by the release of the Eighth Air Force from GYMNAST. On 31 March, he suggested that the now "task-less" force be made available as a nucleus for the AAFIB, and within the next few days the Eighth Air Force was committed to the United Kingdom.¹⁷ Already in England since February on a mission to prepare the way for the AAFIB were Brig. Gen. Ira C. Eaker and a small bomber command staff, who by this new commitment were rewarded with the definite knowledge that their plans and preparations would soon have practical application.

The assignment to the AAFIB involved a drastic change in the nature of the Eighth. SUPER-GYMNAST had called for a mobile tactical air force, whereas the principal air task in the United Kingdom had long been conceived as strategic bombardment of Germany. To adapt the Eighth Air Force to its new mission required a considerable reshuffling of its combat organizations. It was this need which had brought about the release to the Third Air Force at the end of March of all Air Corps and service units save the headquarters of the Eighth Air Force and the VIII Bomber and Interceptor Commands.¹⁸ In April, the VIII Air Force Base Command, the 12th Replacement Control Depot, and the 7th Photo Squadron were reassigned from the Third Air Force.¹⁹ The Eighth got, also, others of its original units, of which the most important was the 2d Air Depot Group, and in April a large number of combat units assigned to operational training units were earmarked for eventual assignment to the Eighth Air Force and shipment to the United Kingdom. These units comprised twenty-three heavy bombardment groups, four medium bombardment groups, five light bombardment groups, four dive bomber groups, and thirteen pursuit groups.²⁰ Actually committed to the Eighth Air Force for the initial movement to the United Kingdom were only the 1st and 31st Pursuit Groups, the 97th Bombardment Group (H), and the 5th Photo Squadron.²¹ Before the Eighth Air Force could reach the combat strength envisaged for it

at this time, it would see a large number of these forty-nine groups diverted to other air forces all over the world.

In the reorganization of the Eighth Air Force and the subsequent feverish efforts to prepare it for movement overseas, the chief responsibility was borne by General Spaatz, though his formal assumption of command did not come until 5 May.²² Brig. Gen. Asa N. Duncan and the headquarters staff of the Eighth Air Force were made responsible to him, and in early April the headquarters was split into two echelons. One remained in Savannah to care for the administrative and operational needs of the several commands. The other, the Bolling Field echelon, became the nerve center of the force itself. Located near AAF Headquarters in Washington, this element of the Eighth's staff worked in close conjunction with the Air Staff itself. At Bolling Field, after numerous conferences and studies, details of the organization, mission, and training began to be transformed into functional terms.²³ Major decisions taken in April and May provided the basis for concrete action to facilitate the removal of the Eighth to the United Kingdom, and shaped the organization that would be established during the spring and summer of 1942. The VIII Ground Air Support Command was established on 28 April²⁴ and the VIII Air Force Composite Command, which was intended as a training organization, on 4 July.²⁵ Redesignations of commands during this period and in subsequent months transformed the Interceptor Command into the Fighter Command, the Base Command into the Service Command, and the Ground Air Support Command into the Air Support Command.²⁶

To overcome the difficulty arising from a general dearth of experienced officers for staff positions, it became necessary to commission direct from civilian life large numbers of professional and business men who volunteered their services. Most of these men were commissioned for specific assignment to one of the staffs, a practice that was especially important in staffing the service command, which had perhaps the greatest immediate need for officer personnel.²⁷ Many of the newly commissioned officers came from the southeastern part of the United States, where the several headquarters were then located, and many of them, having moved directly from civilian life to the assumption of their new responsibilities, went overseas without any military training whatsoever, a condition which was partially

remedied in the theater.²⁸ To increase the number of officers experienced in the ways of the Army, commissions were also issued to noncommissioned officers of the Regular Army, some of whom came to hold highly responsible staff positions in the Eighth. Action taken during May and June also helped to fill shortages of enlisted personnel, but many units were brought up to strength only at the port of embarkation and on the very eve of departure. The story with reference to shortages of equipment is similar. Substantial progress was made toward a solution of the problem, but some units went overseas without full equipment—a not unusual event in the hectic days of 1942.²⁹

A major preoccupation at all levels of the Eighth during the spring was training. In the operational training units (OTU) of the Second and Third Air Forces, intensive effort marked the preparation of planes and crews for projected movement across the Atlantic. Orders directed that particular attention be paid the problems of rendezvous between bombers and fighters, for Generals Arnold and Spaatz already had established the policy that fighters of the Eighth Air Force would be used primarily for escort of its bombers.³⁰ Ground crews received their training on the job mainly, though some individuals were sent to technical schools for special training.³¹

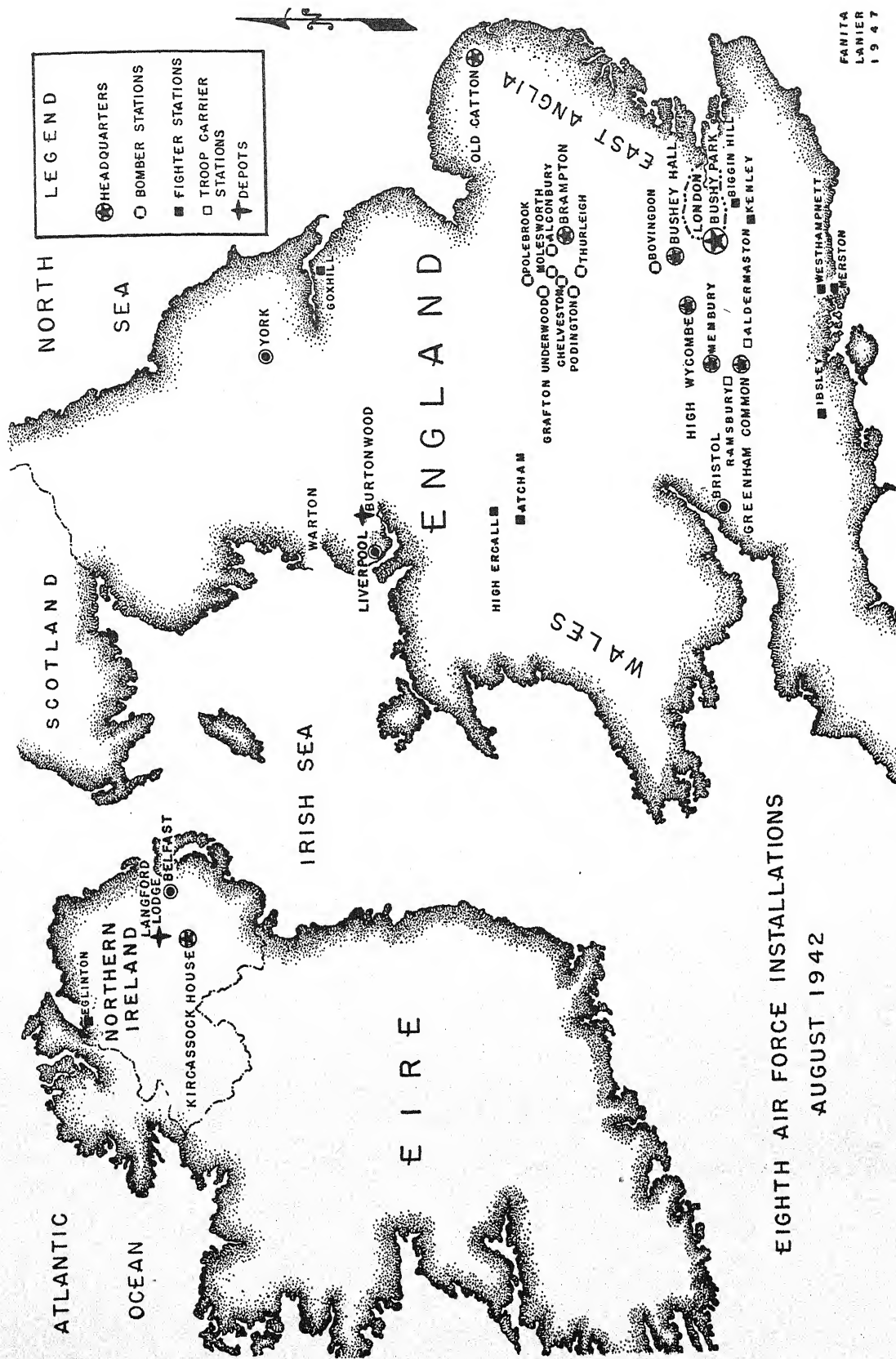
Preparations for the movement of the Eighth to Britain included an early dispatch of advance echelons of the several headquarters. A total of 39 officers and 348 enlisted men, representing Eighth Air Force headquarters and the bomber, fighter, and service commands, reached England early in May to join the so-called Bomber Command Shadow Staff under General Eaker.³² Other officers, individually and in groups, followed during May and June to undertake particular tasks connected with the establishment of the Eighth Air Force in the United Kingdom. In the unavoidable haste of these first days, confusion and embarrassment resulted from the occasional failure of individuals to understand and follow newly established channels for communication between the British and the Americans,³³ but the emphasis belongs elsewhere. By the end of May, plans and preparations in England and the United States had reached a point that permitted a beginning to be made in the overseas movement of the Eighth. Indeed, the first large body of its troops was already on the way.

Preparations in the United Kingdom

The theater of operations in which the Eighth Air Force soon would make its debut had been for two years the scene of great air battles. By 1942 the Royal Air Force had become a battle-proved, experience-wise organization, with by far the greater part of its strength concentrated in the United Kingdom, whose defense was the cardinal point in British war policy. The establishment of another great air force in a country smaller than the state of Alabama (virtually all of the Eighth would be stationed in England proper), and one that was already crowded with airdromes and teeming with air traffic, would require all of the administrative skill, experience, and patience with which both the RAF and the AAF were endowed.

The task of representing the AAF in the initial stages of what was to prove an extraordinarily successful collaboration had fallen to General Eaker. Although the Special Observer Group (SPOBS), even before Pearl Harbor, had examined with leaders of the RAF some of the problems that would be involved in the accommodation of an American air force, it required the hard impact of actual warfare to lend urgency and certitude to preparations for the participation of the AAF in the European war. The advance echelon of the Bomber Command, Army Air Force in Great Britain under General Eaker was charged by General Arnold on 31 January to prepare for the arrival, accommodation, training, and operation of a bomber command.³⁴ Eaker and a party of six other officers reached England by air on 20 February and reported to Maj. Gen. James E. Chaney, commanding general of United States Army Forces British Isles (USAFBI).³⁵

The first American air headquarters in Europe, the United States Army Bomber Command, USAFBI, was established under command of General Eaker by order of General Chaney on 22 February.³⁶ Three days later Chaney directed Eaker and his small staff, in accordance with previously made arrangements, to proceed to the headquarters of RAF Bomber Command for the purpose of understudying its staff and drafting recommendations for the training, equipment, and employment of American air units scheduled to operate from the United Kingdom. Additional duties required examination of British airfields intended for use by the Americans, submission of a plan for the reception and assignment to stations of bomber units, and



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preparation of a scheme for the administration and supply of such units with particular attention to the needs of two heavy bombardment groups then scheduled as the initial combat echelon.³⁷ To take appropriate steps toward a close co-ordination of effort with the RAF, to select and make ready the fields from which the Americans would fly, to prepare for the reception of an increasing flow of AAF units, and to provide for their fundamental needs—these were the major tasks.

For several weeks thereafter, the American officers, whose number was soon increased by arrival of eleven others sent from the United States, shared offices and living quarters with the staff of RAF Bomber Command. Even when on 15 April General Eaker took over for his own headquarters a hurriedly evacuated girls' school at High Wycombe in Buckinghamshire, about thirty miles west of London, he remained virtually next door to RAF Bomber Command headquarters.³⁸ Already he had submitted to General Chaney on 20 March a comprehensive study of the problems involved in the establishment of an American air force.³⁹ The Eaker plan, in accordance with Chaney's directive, made provision for the accommodation, training, and initiation into combat of the two heavy bombardment groups which Washington had earmarked for spring delivery to the United Kingdom, and for other units which were to follow. The subsequent assignment of the Eighth Air Force to the United Kingdom would require revision of some of the planning factors used, but in general the actual establishment of the Eighth in England followed the pattern of the Eaker plan. Sections dealing with logistical problems drew partly on previous study by SPOBS and USAFBI.

The organizational scheme of the American air force in Britain, long a matter of dispute between Washington and General Chaney's headquarters, was not crystallized until after the arrival and establishment of Eighth Air Force headquarters in June. Meanwhile, General Eaker shared with Col. Alfred J. Lyon, air officer of USAFBI, the responsibility for making preparations to receive the Eighth. As the advance echelons of the several headquarters arrived from the United States to participate in the preparatory effort, the variety and multiplicity of AAF activities in England led USAFBI to direct General Eaker to establish some central control.⁴⁰ In consequence, on 19 May the Detachment Headquarters, Eighth Air Force, under command of General Eaker, assumed control of all U.S. Army air

organizations in the British Isles.⁴¹ It remained the ranking AAF command until the opening of General Spaatz' headquarters on 18 June.

The preparatory effort which meantime fell under Eaker's direction may be conveniently divided into two broad categories—logistics and operations. In either category much of the work consisted of planning, for the immediate future or on a long-range basis. It was natural that actual accomplishments were largely within the realm of logistics, for before the bomber campaign could begin much had to be done in such important if unspectacular fields as supply, maintenance, transportation, technical training, and housekeeping. Operations in the narrowest sense could begin only with the first attack on the enemy, but even when conceived in the usual fashion to include operational training and the development of auxiliary operational techniques, the Eighth was long handicapped by lack of combat planes and of tactical experience.

It was possible to draw upon the rich operational experience of the RAF, however, and during the spring and early summer of 1942, basic decisions in the field of operational planning prepared the way for a degree of co-operation and combined action probably never before equaled by the military forces of two great nations. The story provides another significant chapter in the long history of Anglo-American relations. If at times leaders of the RAF tended to view paternally the untried theories of the AAF and displayed an understandable disposition to guide the Americans along paths tested in the bitter experience of actual combat, they at the same time understood and respected the organizational capacity and the experimental temperament of the people with whom they were now allied. And if the Americans were inclined to insist upon the establishment of a completely independent air force, one that would be copartner and not junior partner in the assault on Germany, they also represented an organization that for over two years had sought helpful lessons in the experience of the RAF and had found there proof of its own basic assumptions. Differences on certain matters would persist throughout the war, as was only natural, but to the many ties which joined the two peoples there was added in this instance the bond that makes all airmen one.

The Eaker plan of 20 March assumed that in the highly important field of target selection the work would be done in conference be-

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tween British and American commanders.⁴² On undertaking the establishment of a headquarters at High Wycombe (PINETREE in code) that would serve for the immediate direction of American bomber operations, General Eaker followed as far as was possible the organization of the near-by RAF Bomber Command, thus achieving a measure of organizational similarity designed to facilitate co-operation. By 18 May he was able to notify Spaatz that the bomber headquarters should be ready to "control and supervise in bombardment operations by the 1st of June."⁴³ The tardy arrival of the first combat units obviated any test of that promise in June, but plans for close co-ordination with the RAF proceeded along lines that permitted the prompt adoption of formal agreements following the arrival of General Spaatz. Early in July, the RAF invited the Eighth Air Force to share membership on some of the more important RAF operational committees—those dealing with targets, operational research, interception, and bomber operations.⁴⁴ Composed of senior staff officers for the study of operations data as a guide to policy, these committees thus took an important step toward their transformation into combined committees representative of the two air forces. Close personal agreement having theretofore marked the relations between General Eaker, who continued to command the VIII Bomber Command, and Air Marshal Sir Arthur T. Harris, commanding the RAF Bomber Command, they further agreed on the eve of the Eighth's entry into combat that Eaker, or his representative, would attend the daily operations conference held by Harris and that the two commands would co-ordinate action for the selection of targets and the issuance of communiqués or other press releases.⁴⁵ The pattern of collaboration thus established for bomber operations was promptly followed by the two fighter commands.

Not until November 1942 was a definitive understanding with the British reached on the most fundamental question arising from the purpose to base American fighter planes in the United Kingdom. The RAF proposed that American fighter units be integrated with its own under a plan eventually to assign entire defensive sectors of the United Kingdom to AAF operational control.⁴⁶ The suggestion had obvious administrative advantages to recommend it, but it would have involved the assumption of heavy responsibilities for defense of the British Isles. The AAF preferred that all of its forces be concentrated in an offensive effort against Germany, with the defensive

mission, which of course included protection of our own bases in Britain, continuing in the experienced hands of the RAF Fighter Command. General Spaatz defined the primary function of the AAF fighter planes as that of supporting "our bombers in an effort to secure air *Supremacy* and not for the defense of England," but he agreed that they should be so trained as to permit their assumption of defensive obligations in the event of an emergency.⁴⁷ On this basis the decision was finally made.⁴⁸ The RAF would be responsible for aerial defense of the sectors in which American airdromes were located, and AAF fighter forces would be committed principally to the escort of bomber strikes against the continent. It had been agreed between General Arnold and Air Chief Marshal Sir Charles Portal, Chief of Air Staff, RAF, in May that the Americans, in line with an earlier decision dividing production responsibilities between the aircraft industries of the two countries, would assume a primary responsibility for the provision of air transport, even for the training of British airborne divisions.⁴⁹ Thus in the great airborne operations that followed, American troop carrier units would provide most of the lift.

The defensive responsibilities assumed by the British included anti-aircraft and other ground defense of American airdromes. The AAF had assumed in the earliest planning for a bomber command that such an arrangement could be effected,⁵⁰ but as the number of our projected installations increased, it became apparent that British forces would be unequal to the task. Steps had been taken as early as August to set up an air defense organization within the Eighth Air Force,⁵¹ but American anti-aircraft and infantry units could not be made available even in the number required to supplement those provided by the British, much less in sufficient quantity to replace them.⁵² Our allies consequently continued to carry the main responsibility into the early part of 1943, at which time the Eighth Air Force took over the job with forces hardly more adequate than those the British had been able to provide.⁵³ At no time during the war, fortunately, did the Germans undertake large-scale attacks on American installations in the United Kingdom.

The heaviest indebtedness of the Eighth to its British allies fell, perhaps, in the field of intelligence. When war began, the AAF probably was more deficient in its provision for intelligence than in any other phase of its activities—a deficiency brought home with increas-

ing force to General Eaker and his staff during their study of the RAF Bomber Command in February and March.⁵⁴ Tables of organization for AAF tactical groups were weak in combat intelligence categories, and since the AAF intelligence school at Harrisburg, Pennsylvania, did not open until March 1942, it proved impossible to fill even the limited number of jobs authorized. General Eaker in his report of 20 March observed that "Intelligence represents the section of activity in which we are weakest," and concluded "after studying their [British] intelligence work that we can do no better initially than to model their establishment with but slight change."⁵⁵ Accordingly, Washington was requested to send immediately 50 intelligence officers for training by the RAF Bomber Command, and in May the first of these arrived.⁵⁶ In an intelligence school established at High Wycombe they received a week of orientation before being sent on to the British schools.⁵⁷ The VIII Bomber Command requested an additional 165 intelligence officers in July under a plan to reach the total of 198 by 1 September.⁵⁸ General Eaker and Lt. Harris B. Hull, his intelligence officer, had recommended in March 6 intelligence officers for each squadron, 7 for each group headquarters, 7 at wing headquarters, and 32 for bomber command headquarters—these to assume the normal responsibility for preparation of target data, photo interpretation, prisoner of war interrogation, enemy order of battle, the maintenance of intelligence libraries, preparation of summaries and reports, and, in addition, for public relations.⁵⁹ New tables of organization for the various echelons of the AAF published during 1942 did not provide for intelligence officers in these numbers, but they did reflect an attempt to provide more adequately than theretofore for the intelligence function.⁶⁰

Reliance on the RAF and other British agencies for intelligence would characterize the American air effort in Europe throughout the war, and this was especially true of intelligence in its more fundamental aspects. Possessed of long-established and well-organized intelligence services, the British initially supplied the Eighth with most of the information from which it prepared its target data. The Americans developed in time increasingly helpful services of their own, but it was decided wisely at the outset to avoid unnecessary duplication of effort by placing American personnel in already existing British organizations. It was agreed, for instance, that the RAF would train American officers in photo interpretation for assignment to its own

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Central Interpretation Unit.⁶¹ AAF officers in various categories continued to receive training in British intelligence schools throughout the war.

Similarly, the Eighth Air Force long remained dependent on the British for essential weather services. But in line with AAF policy to make the American air force as independent of the RAF as was practicable, General Eaker urged in March a prompt dispatch of weather officers "to begin the study of this beastly weather." He emphasized the basic importance of weather forecasts to the type of operations planned for the American bombers, and in his appeal to General Spaatz observed that it was all right "to say 'get it from the British,' but we want to be self-supporting as soon as possible and it takes weather people to get it from the British and to transmit it."⁶² In response to this request, the 18th Weather Squadron was activated at Bolling Field in May, and shipped to England in August. On its arrival, a weather school conducted by American personnel at High Wycombe was established, and liaison with RAF weather services was promptly accomplished.⁶³ No small part of the training required involved an introduction to the organization, procedure, techniques, and terminology employed by the British, for they continued to be the major source of weather information.

Integration with the British communications system naturally presented one of the more fundamental problems antecedent to operations—a problem that in its solution would leave a mark upon the organizational as well as the operational history of the Eighth. The RAF had developed an elaborate system, based on extensive radio and radar installations, for the control of air traffic over the United Kingdom. It was necessary, of course, that American and British forces operate subject to one control; and every advantage lay in having the Americans, by such adjustment of equipment and training as might be necessary, fitted into the already established and highly efficient British system. The overriding importance of this problem had brought AAF communications experts into close consultation with their counterparts in the RAF as early as January 1942 in an effort to determine the communications requirements of American aircraft to operate from England and to translate their conclusions into practical terms of production and modification.⁶⁴ This prompt action made possible the provision of at least minimum equipment for air-to-ground communication for flights during the summer of

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Eighth Air Force planes over the North Atlantic route, the last leg of which, from Iceland to Prestwick, fell under British control. Much of the equipment necessary to this movement was supplied by the British, who provided for many of our planes, after arrival in England, equipment which could not be made available in the United States.⁶⁵

The airdromes initially taken over by the Americans were equipped with RAF communications facilities, which continued to be staffed largely by RAF technical personnel.⁶⁶ As the Americans developed their own installations, the British telephone and teletype networks were extended to include them. All radar equipment and most of the radio equipment used by the Eighth Air Force during 1942 and well into 1943 was of British design and manufacture; at the same time, maintenance for radio equipment was provided by the Civilian Repair Organization, which functioned under the control of the Ministry of Aircraft Production.⁶⁷ In the opinion of the signal officer of the VIII Bomber Command in November 1942, the "only reason that U.S. Groups have gotten along so well with regard to communications until now is because the RAF have been very generous in supplying Signal Officers and additional personnel."⁶⁸ That was hardly an overstatement, for in August 1942 the Eighth Air Force remained almost completely dependent upon the British for both ground and ground-to-air communications.

The necessity for integrated action with the British, in this and other fields, naturally posed special problems of training, a subject which consumed much time and effort during the spring and summer of 1942. An American proposal in September 1941 that the RAF provide equipment and personnel to familiarize AAF fighter squadrons with special RAF methods indicates an early appreciation of the fundamental importance of adjustment in the training program within the United States.⁶⁹ General Eaker's report of 20 March lent new emphasis to this necessity, and was followed by helpful efforts to establish and maintain close liaison between the theater and those charged with training in the United States. Preparation of training data was the responsibility of the bomber command G-3 section, which under the direction of Col. Frank A. Armstrong assembled materials for a special training manual. Concerned chiefly with the problems of heavy bomber units, it was sent on its completion in June to the United States for use by operational training units there

and served in England for the indoctrination of newly arrived units.⁷⁰

During the months following submission of his report to General Chaney, General Eaker and his staff also formulated detailed plans for the establishment of a training organization in the British Isles. They planned that all training at first would be conducted under direction of Bomber Command, and made arrangements for the acquisition from the RAF of a nearly completed installation at Bovingdon in Hertfordshire, northwest of London, and of its satellite field at Oakley. Eaker requested still another site (the choice eventually fell on Cheddington, near Bovingdon) for use in the training of fighter units. Necessary personnel and equipment were requested from the United States, and training schedules adjusted to the requirements of the initial groups expected in May were presented to USAFBI.⁷¹ These schedules were revised upward in May upon receipt of information that the build-up planned for the Eighth called for thirty combat groups, both bomber and fighter, to reach the United Kingdom by October 1942.⁷² Accordingly, the Americans now requested a total of eight airdromes for use in training, three to be used for fighter pilots and five for bomber crews. Because of the RAF's reluctance to use for training purposes badly needed operational airdromes in England, the British recommended that the Eighth consider the use of Ulster (Northern Ireland), where seven airdromes could be made available for the purpose.⁷³ Such was the arrangement agreed upon as through May and June plans for a training establishment took shape.

Since it was intended that organized tactical units on arrival would go directly to their permanent stations for familiarization and final pre-combat training, the interest in special training installations arose from concern for the problem of replacement.⁷⁴ General Eaker had calculated, on the basis of British experience which admittedly was not entirely valid for daylight operations, that American bomber losses would average 5 per cent per mission on the basis of ten missions a month, and 3 per cent for twelve missions per month in the case of fighters.⁷⁵ To assure operation of each unit at maximum strength, the projected training establishment would serve principally to provide combat crew replacement centers (CCRC) from which fully trained crews could be supplied as combat losses occurred. At the Arnold-Portal conference in London late in May, it was agreed that the RAF would provide eight fields for CCRC's by September 1942 and a total of sixteen by the following April.⁷⁶ In June 1942,

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when the Eighth Air Force had been established in England, a more definite understanding called for the transfer of a headquarters site and seven fields in Northern Ireland during the course of 1942 in addition to Bovingdon and Cheddington, each of the last two minus their satellite fields. Eaker planned that Bovingdon and Cheddington would be assigned, respectively, to the bomber and fighter commands to serve as "final advanced aircrew operational training and distributing centers in England" for crews received from the combat crew replacement centers in Ireland.⁷⁷

General Eaker in May had recommended the organization under the VIII Bomber Command of a training wing to be patterned after a similar RAF headquarters, and of another for the VIII Fighter Command.⁷⁸ With the selection of Northern Ireland as the main center of training activity, however, he advocated in June establishment of a training command in that area.⁷⁹ General Spaatz shared Eaker's deep concern for an adequate flow of replacement crews,⁸⁰ and accepted his formula for their proper training. Spaatz' request that the War Department establish a training command for the Eighth Air Force was granted, and on 4 July 1942 the VIII Air Force Composite Command was activated at Bolling Field.⁸¹ As events proved, the composite command would have little to do for more than a year after its activation; not until September 1943 would combat crews be sent to Northern Ireland for training.⁸² After the decision to undertake an invasion of Northwest Africa there would be few replacements for the Eighth, and their training was taken care of at Bovingdon and Cheddington in England rather than in Northern Ireland. The early history of the VIII Air Force Composite Command speaks chiefly of hopes deferred by operation TORCH—the African invasion.

Logistical Planning

Before the arrival of General Eaker and his staff, General Chaney's air officer, Col. Alfred J. Lyon, had carried forward logistical planning and preparation for an American air force in Britain. Even after Eaker reached England, and with the aid during the spring of an advance echelon of the VIII Air Force Service Command, Lyon continued to perform those functions with vigor and foresight until the full headquarters of the service command was established in July. His work had been complemented by that of occasional AAF missions sent from Washington,⁸³ but the chief responsibility had been dele-

gated to him by General Chaney. Before Pearl Harbor, his activities had been conditioned largely by deployment plans stipulated in the War Department strategic plan RAINBOW No. 5 and by the implications of air lend-lease. Preliminary and necessarily tentative plans, made in consultation with British officials, had centered on such questions as the accommodation of American air units, the training of AAF technical personnel by the RAF, and the establishment of U.S.-managed depots to service the RAF's American-built planes.

The progress made toward a common understanding of some of the more fundamental problems greatly facilitated collaboration between the air arms of the two nations after December 1941. As early as February 1942, the British Air Ministry had prepared for its guidance a comprehensive statement of policy and procedure which was circulated under the title of Joint Organization and Maintenance (United States). This document provided a sound foundation for Anglo-American co-operation in the establishment of the Eighth Air Force, and was kept current through the ensuing years by a series of amendments shaped in conferences between British and American officials. Its constructive contribution to a solution of the problems involved in receiving, accommodating, and servicing an American air force was promptly supplemented by the practice of establishing special sections within the major divisions of the Air Ministry for handling American questions.⁸⁴ Recognizing the tremendous importance of the effort to build a great American air force in the United Kingdom, the Air Ministry prepared to play its part by the most careful and detailed planning.

General Eaker's bomber command plan of 20 March contributed a further clarification of the problems to be faced. Setting forth an "Ideal Method" that would have required the development of an independent system of supply and maintenance, complete with base depots, before the initiation of combat operations, the plan recognized that a consequent postponement of our active participation in the European air war until the end of 1942 could hardly be countenanced. The alternative, which called for extensive use of British facilities and assistance at the outset, on the other hand, would permit an earlier inauguration of operations against the enemy and the building of an American logistical organization concurrently with their development.⁸⁵ There was of course little room for debate. Indeed,

the latter policy had in effect already been adopted, as General Eaker well understood.

It had been decided in December 1941 that American bomber units, at least initially, would be based in the general area of Huntingdon and East Anglia, a section of England lying above London and known to Americans chiefly as a principal source of the Puritan emigration to New England in the seventeenth century. Because of the time required for the construction of airdromes and their fundamental importance to any plan for combined operations, the British and American staffs had given the question consideration at an early date. According to information used by the American Air Staff in August 1941, when it was engaged in the drafting of AWPDI, there would be available for American use after the RAF had reached maximum strength 105 airdromes for bombers and 25 for pursuit planes.⁸⁶ Told of the scale of operations contemplated by the Americans, the RAF notified the AAF in the following December that airdrome accommodations for 2,300 American heavy bombers could be made ready by June 1943.⁸⁷ American officers had undertaken in October and November a survey of airfields proposed for our use in the United Kingdom, where a total of 15 airdromes—8 in England, 2 in Scotland, and 5 in Northern Ireland—were earmarked for American use by the RAF.⁸⁸ In December, plans finally narrowed the selection of airdromes to be prepared for the first American bomber units to 8 fields then under construction for No. 8 Group of RAF Bomber Command in the Huntingdon area.⁸⁹ Though not completed until well into 1942, they were ready to receive the American flyers in June.

While the construction of bases proceeded, Generals Arnold and Eaker raised the question of the advisability of locating the American forces in the more northerly region of Yorkshire. There the bombers would be closer to projected supply and maintenance facilities in the neighborhood of Liverpool. In addition to the saving on transportation, Arnold and Eaker felt that the York area possibly offered greater room for expansion.⁹⁰ The suggestion received some support among responsible officers of the RAF, but it would have involved readjustment of plans to which considerable commitments already had been made and a sacrifice of advantages to be derived from the close proximity of the American and British bomber commands. Accordingly, by early May the question had been definitely decided in favor of the Huntingdon area.⁹¹ In this area and adjacent parts of

East Anglia, the AAF heavies remained throughout the war, and Grafton Underwood, Thurleigh, Little Staughton, Molesworth, Kimbolton, Polebrook, Chelveston, and Podington became famous as the Eighth's oldest bomber bases.*

A comprehensive agreement was reached late in May in conference between General Arnold and Air Chief Marshal Portal. It was agreed that a total of 127 airdromes, some of them currently in use by the RAF and others to be constructed, would be provided for the Eighth Air Force, 75 for the use of the VIII Bomber Command in East Anglia and the remainder in southern England and Northern Ireland. From Huntingdonshire, the American units would expand eastward to take over additional group areas of RAF Bomber Command with a view to achieving a distinct American bomber zone. The basis of allotment was one airdrome for each heavy bombardment group, and three for every two fighter, medium bombardment, or light bombardment groups.† The agreement included an understanding that eleven fields would be prepared for fighters in Northern Ireland, though as it actually developed no American fighter units were sent to Ulster except for training. AAF insistence that its fighters be used for bomber escort led to their being based in England, adjacent to or within the bomber zone and in southern England. The total allotment included provision for transport groups, air support units, and combat crew replacement centers.⁹² Coincidentally with the opening of Eighth Air Force headquarters and the arrival of the first combat group in June, the Air Ministry published a tentative list of sixty-six airdromes to be made ready for VIII Bomber Command by March

* For location of those occupied as early as August 1942, see map, p. 619.

† Because British airdromes were normally constructed to accommodate either one or two RAF squadrons, planning theretofore had proceeded on the assumption that one American heavy bombardment group would occupy two airdromes: a parent field and a satellite. A shortage of fields made this impossible, however, and eventually all airdromes occupied by the Eighth would accommodate full groups. For purposes of comparison, the following facts regarding the relative size of AAF and RAF heavy bombardment units in 1942 should be noted:

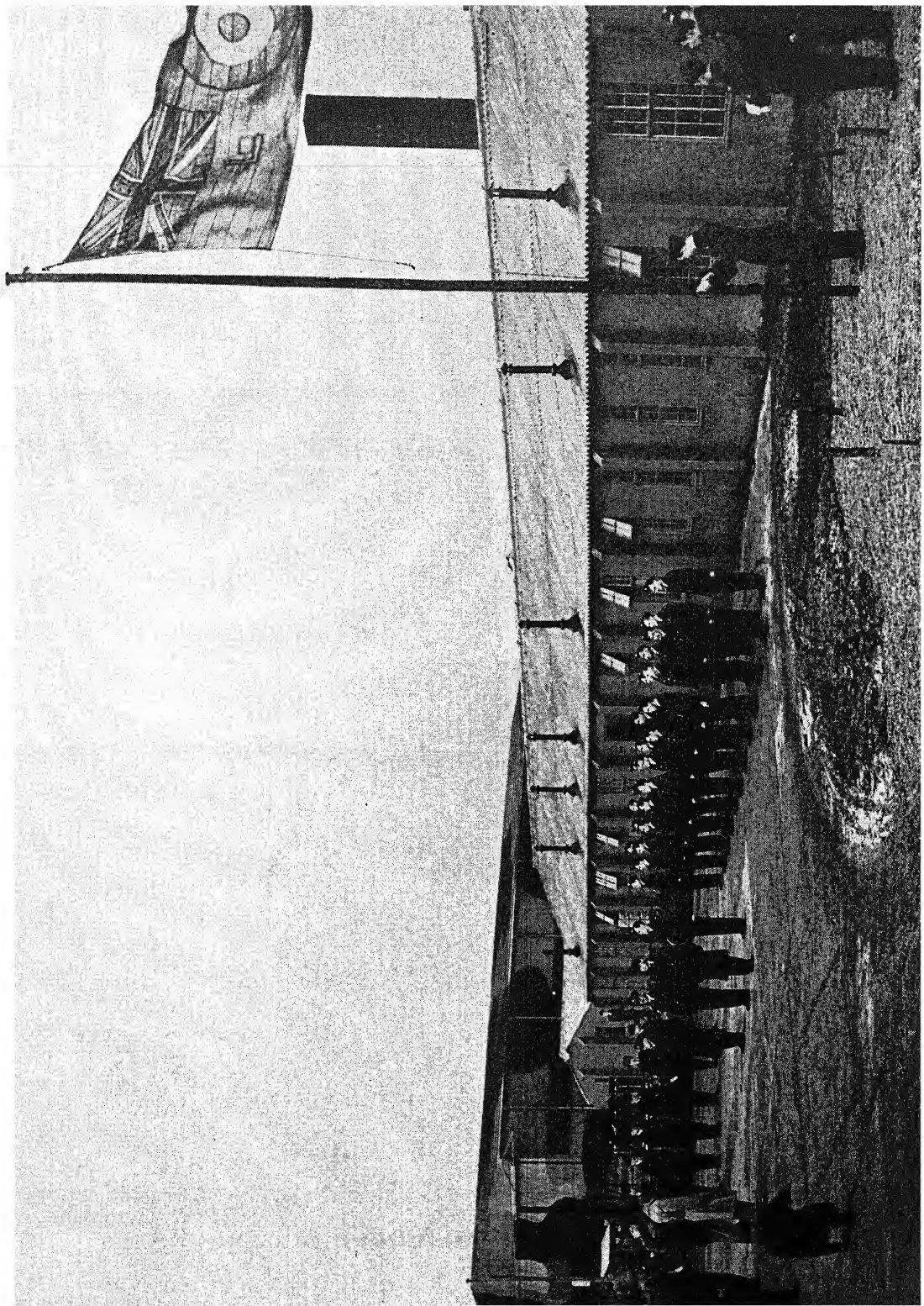
AAF		RAF	
Squadron	—8 a/c	Squadron	—16 a/c
Group	—3 squadrons	Wing	— 3 squadrons
Combat Wing	—2 or more groups	Group	— 6 or 7 wings

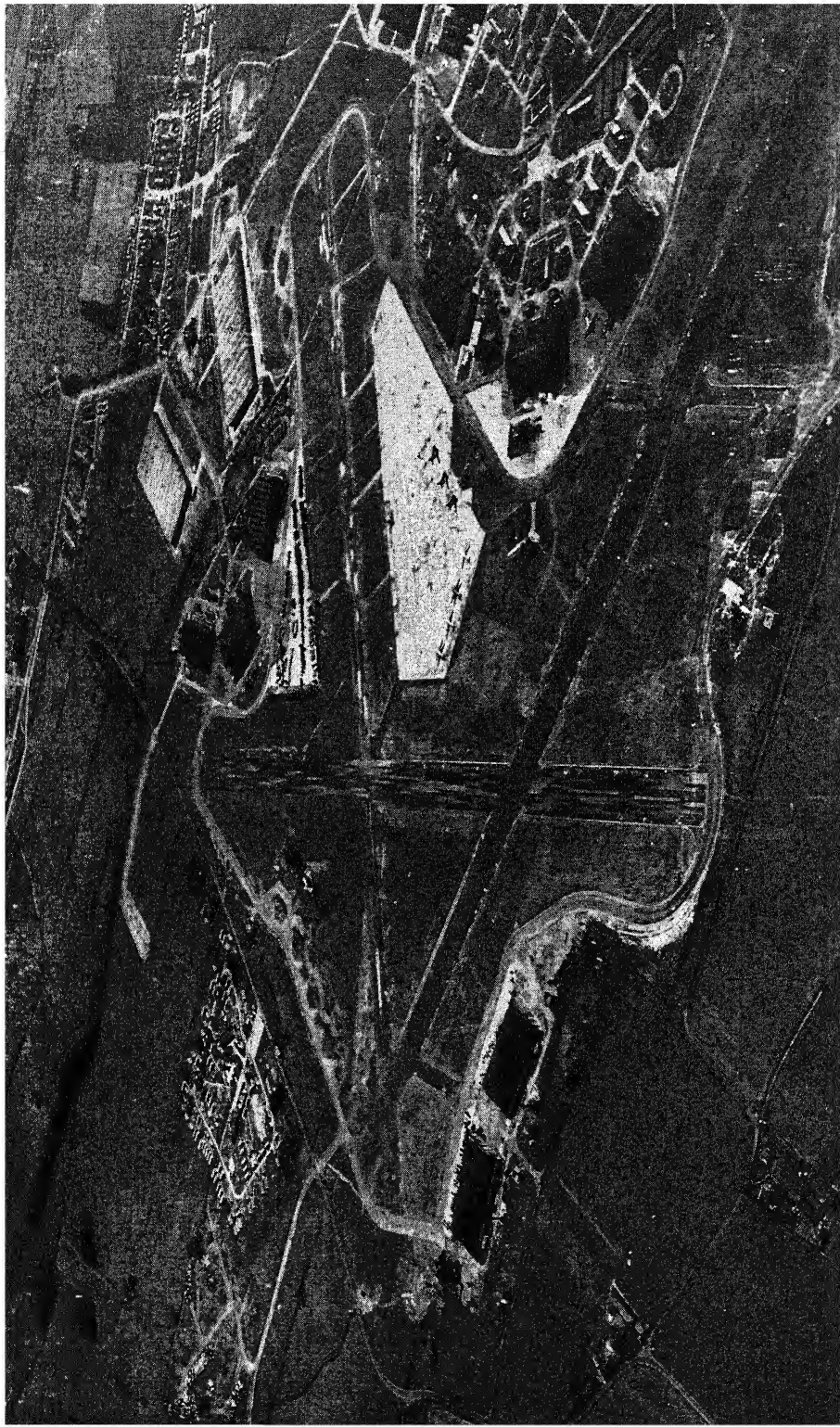
During the course of the war, the make-up of all of the organizations, both RAF and AAF, varied frequently in terms of aircraft, personnel, and number of subordinate units.

1943 and of twenty-one others which by the same date would become available for other Eighth Air Force commands.⁹³ This estimate was subsequently proved to have been somewhat optimistic, but it served as a useful indication for planning purposes of what could be counted upon in advance of **ROUNDUP**—the plan for the invasion of France in the spring of 1943.

It already had been agreed that construction costs in the development of bases for American occupancy would not be charged to the United States. Ownership of all installations in the United Kingdom would remain with the British, AAF units being considered as tenants, and the financial considerations involved were handled under the reciprocal aid provisions of the lend-lease agreements.⁹⁴ Under the arrangement, the Americans accepted RAF standards of accommodation, though as time passed, modification in individual instances would be made. During April, an air section of the office of the chief engineer, USAFBI, had been set up with responsibility for dealing with the Air Ministry in all matters pertaining to construction for the Eighth Air Force. The new section established liaison with the Air Ministry and with the Ministry of Aircraft Production, which had been made responsible for the construction of base air depots.⁹⁵ When the European Theater of Operations under Maj. Gen. Dwight D. Eisenhower succeeded USAFBI in June, responsibility for problems of construction for American units passed to the chief engineer, ETO, where it remained throughout the war.

Conversion of Great Britain into a gigantic aircraft carrier had been undertaken by the RAF as early as 1940, but American participation in the war required an upward revision in its building program that ultimately added almost a hundred large airfields to the total already built and projected. It was a difficult task. The pinch of inadequate space, labor, and construction equipment made necessary the most careful and precise planning, and since this in turn depended upon exact information concerning the size and composition of the air forces to be disposed in the United Kingdom, the task became the more difficult because of frequent changes during the first two years of plans for the commitment of U.S. units to the United Kingdom.⁹⁶ Yet, though the building program repeatedly fell behind schedule, there would be no instance of a combat group kept out of operation for the lack of an operating base.





FONWOOD AS IT APPEARED AT THE CLOSE OF THE WAR

By no means the least significant of the influences growing out of arrangements with the British for the occupation of airdromes was the effect on the organization of the Eighth Air Force. In taking over British fields, the unit of transfer was normally an RAF group area, which, in the case of No. 8 Group, was to have twenty-one fields, divided into seven "clutches" of three fields each. One of the three fields in each clutch acted as a wing or station headquarters and it alone had direct communication with group headquarters, which, in turn, was the only station in the group area having direct communication with RAF Bomber Command headquarters. Since without extensive modification of the communications network it would be impossible for VIII Bomber Command headquarters to exercise direct control of the operations of all bombardment groups, General Eaker planned the establishment, originally on a provisional basis, of combat wings, each of which was to exercise operational control of three groups. Although much larger in numbers of aircraft and personnel, the combat wing would parallel the RAF wing in the communications network, and would be, at the same time, a desirable operational echelon of the VIII Bomber Command. The combat wings were to be grouped in threes or fours under bombardment wings which, in turn, were directly responsible to VIII Bomber Command headquarters. The bombardment wings, which developed into the great air divisions of 1943-45, resembled the RAF groups in that their headquarters were the only installations having direct communications with VIII Bomber Command headquarters. This pattern of organization, dictated by both communications and operational considerations, would be in existence in the Eighth Air Force by the spring of 1943.⁹⁷

No part of the problem of establishing an American air force in Britain was more fundamental, or entailed more difficulties, than that of providing adequate supply and maintenance. A modern air force operating on the scale planned for the Eighth consumes almost unbelievable quantities of fuel and lubricants; requires in addition to the normal supplies of any military organization vast stores of spare parts and tools; and depends for its continuing operation upon facilities for repair and maintenance ranging all the way from the relatively simple equipment used by the ground crew to elaborate and extensive base depots. These speak more forcefully than does anything else, unless it be the aircraft factory itself, of the simple fact that the airplane is a product of the machine age and remains dependent on its technical

devices. Leaders of the AAF were fortunate in the opportunity to base their major effort in one of the highly industrialized countries of the world, for the British were in a position to render a variety of substantial services that would hasten greatly the Eighth's entry into operations. Fortunately, too, there had been opportunities before Pearl Harbor to consider with British leaders some of the particular problems to be faced, and to agree tentatively on an approach to their solution.

The RAF had operated with American-built aircraft long before America's entrance into the war. American-built Catalinas had played a prominent part in the North Atlantic search for the battleship *Bismarck* in May 1941; P-40's had fought against the Italians and Germans in Africa; and RAF Turbinlite night fighter squadrons and some bomber squadrons had been equipped with the American A-20 during 1941. Subsequent to the adoption of lend-lease in March of 1941, the RAF pool of American-built aircraft had been increased to such proportions that maintenance of the aircraft became a problem of special concern to the British. To render assistance in this matter, and at the same time to extract valuable information from the experience of the RAF in the use of our equipment, a small number of American maintenance personnel was present in the United Kingdom as early as June 1941.⁹⁸ The following month, Prime Minister Churchill in conference with Messrs. Harry Hopkins and Averell Harriman requested that this assistance be greatly expanded.⁹⁹

In accordance with War Department instructions, the AAF in August sent Maj. Gen. George H. Brett, Chief of the Air Corps, to England for study of the problem. Specifically, he was instructed to study British needs and to recommend such action as the Americans might take under a general plan to provide civilian personnel who could be spared without serious interference with American production.¹⁰⁰ The scope of his inquiries was broadened in September to include British needs in the Middle East,¹⁰¹ and was still further extended by a request from SPOBS that in any consideration of facilities to be provided he bear in mind the needs of an American force much larger than that specified in RAINBOW No. 5. Through Brig. Gen. Joseph T. McNarney it was indicated that SPOBS already had under consideration the establishment of a depot for the repair of American-built aircraft at Langford Lodge in Northern Ireland.¹⁰²

At the end of October, General Brett submitted his report to

General Arnold. He proposed that: (1) the AAF set up mobile repair depots manned by civilians to service American aircraft operated by the RAF in the United Kingdom; (2) the AAF ultimately take over the management of existing British facilities for repair of American-built equipment and provide for their expansion as required, using initially civilian personnel; (3) specifically, and as quickly as possible, Langford Lodge be established as a depot for third echelon maintenance;* and (4) if American air units should operate from bases in the United Kingdom, the United States assume responsibility for third echelon repair facilities for all U.S.-built planes operated by the RAF and AAF, and for the supply of spare parts.¹⁰³

Because of the current shortage of U.S. personnel and equipment, General Arnold refused to assume responsibility for the maintenance of all RAF-operated American planes, but he approved, as a useful step toward the development of an American service organization in the United Kingdom, negotiations for the establishment of a depot at Langford Lodge. It was anticipated that, after the President's approval had been obtained, at least six months would be required to provide necessary equipment and trained personnel, for it would be unwise to rob newly expanding depot facilities in the United States and, in addition, prior commitments to the Philippines and other points would have to be fulfilled first. Meanwhile, General Arnold desired that as far as possible American civilian personnel already in the United Kingdom be used to man the depot.¹⁰⁴

Plans for development of a depot at Langford Lodge proceeded on the assumption that it could best be operated under contract with an American aircraft company. The Lockheed Corporation for some time had operated an assembly plant for the British near Liverpool, and it was evidently felt that this company because of its experience would be especially well equipped to undertake the project.¹⁰⁵ And so, shortly after our entry into war the War Department requested Lockheed to provide a maintenance depot for the AAF at Langford Lodge. The actual contract with the Lockheed Overseas Corporation,

* In AAF usage, maintenance falls into four classifications, as follows: first echelon maintenance covers repair and service that can be provided by the crew of the plane; second echelon maintenance describes that provided by the ground crew forming an integral part of the unit using the equipment; third echelon maintenance covers work beyond the capacities of the using unit and is normally provided by more or less mobile maintenance organizations; fourth echelon maintenance provides general overhaul and reclamation involving the use of heavy tools and machinery in more or less fixed installations.

a subsidiary designated for operation of the depot, was not signed until 1 May 1942. But Lockheed representatives began to survey the site and to draft detailed plans from late December, and the Ministry of Aircraft Production promptly began construction under the provision of a letter of intent furnished by the Materiel Command in the United States in January.¹⁰⁶

General Brett during the preceding October had inspected other areas of the United Kingdom with a view to the probable need of the AAF for another depot. He finally settled on Warton, about twenty-five miles north of Liverpool and close to the excellent industrial and transportation facilities of Lancashire, a selection concurred in by Col. Donald Davison, engineer officer of SPOBS.¹⁰⁷ Brett's recommendations for the establishment of base depots in the United Kingdom became the basis of action in January, when General Arnold directed that they be given effect "insofar as the present situation permits."¹⁰⁸ By March, detailed agreement had been reached between USAFBI and British authorities for the development of Warton as a base air depot for the AAF. But even with the substantial aid to an early completion provided by the surveys and consultations of 1941, it would be 1944 before all of the base air depots were prepared to assume fully the roles envisioned for them.

Meanwhile, the third of the great depots that would form the bedrock on which the structure of AAF operations from the United Kingdom would rest had come into the picture through the necessity to provide some interim establishment. In keeping with principles laid down in the Air Ministry document, Joint Organization and Maintenance (United States), and with recommendations by General Eaker in March,¹⁰⁹ a search was undertaken for existing facilities that could be put almost immediately into use. The choice fell on the British repair depot at Burtonwood, which, as events proved, was destined to become the greatest of American overseas depots and to serve as the very heart of AAF supply and maintenance in the European Theater of Operations. Located midway between Liverpool and Manchester in the heart of Lancashire and served by good transportation, Burtonwood already was engaged in the repair of American-built airframes and engines. Both General Eaker and Colonel Lyon inspected the installation in April, and acting on strong recommendations forwarded by General Chaney, General Arnold immediately initiated action to secure its transfer for American use.¹¹⁰ The

plan under which the transfer was sought called for the existing British technical staff to continue in service there until American technicians became available, and for centralization at Burtonwood of the supply and repair of U.S.-built aircraft in use by the RAF. This would be a step toward inauguration of a policy already agreed upon that would leave to the AAF responsibility for the supply and maintenance (including modification) of all American-built planes operated from the United Kingdom.¹¹¹ The urgent need behind the request received emphasis from Arnold's revelation that current plans proposed to place 1,000 American planes for operation in the United Kingdom by 15 August 1942 and 3,500 by April 1943. Until Langford Lodge and Warton were ready for operation—target dates then stood at October 1942 and January 1943, respectively—Burtonwood would have to serve instead.

During May, consultations in England and in Washington moved toward a prompt understanding with the Ministry of Aircraft Production. By the 23d of the month, General Chaney and the ministry had reached a detailed agreement on a plan to transfer Burtonwood to the exclusive control of the Americans following an interval of joint operation.¹¹² This joint control began at the end of June, with the VIII Air Force Service Command acting as the American agent.¹¹³ The technical staff of the British was largely civilian; and in the absence of an adequate number of skilled American military personnel, General Arnold had directed that civilian technicians be drawn from AAF depots in the United States for service as the Civil Service Detachment at Burtonwood.¹¹⁴ Lockheed, also, was preparing in June to send some 1,500 civilians to man Langford Lodge.¹¹⁵ Thus at the beginning the first two base air depots in Britain were staffed almost entirely by civilian workers. This arrangement was regarded, however, as a temporary measure, and General Spaatz intended that eventually all depots would be operated exclusively by military personnel.¹¹⁶

Although the distance between the base depot area around Liverpool and the sector to be occupied by combat units was not great by American standards, there nevertheless were considerations which dictated the placing of advance depots nearer the combat bases in Huntingdonshire and East Anglia. Efficiency of operation on the scale planned for the Eighth required ready access to spare parts and other supplies; moreover, third echelon repair of battle damage did

not fall within the province of the base depot,* nor could it be performed at combat stations without a wasteful dispersion of skilled personnel. The need was for an advance depot, or depots, through which supplies from the base depots could be distributed to combat stations, and at which urgent maintenance and repair beyond the capacities of the combat group could be provided.¹¹⁷ The bomber command plan of 20 March recommended that a "mobile air depot," the standard AAF designation for that type of service organization and a term reflecting the emphasis on mobility in the earlier GHQ Air Force, be established at Molesworth in Huntingdonshire.¹¹⁸ During the spring, planning agencies in the United States as well as those in England gave attention to the need for a complete service organization and the placing of air depot groups within reach of the combat stations.¹¹⁹ But whether because of the almost overwhelming number of tasks requiring attention and a natural tendency to give first place to the fundamental problem of the base depot, or because of a certain difficulty in shifting the emphasis from a mobile to a static system, Eaker was compelled to report to Spaatz in May that the principal lag in the development of an adequate organization in Britain fell in the general area of "the Air Service Command Depots and establishments."¹²⁰ Not until after the arrival of the VIII Air Force Service Command in July was a comprehensive plan fully developed.

Another phase of the problem that required close attention was the securing of adequate storage space in a country already strained in this particular virtually to capacity. In the location of base depots the question of storage had been a major consideration, but it became evident that these establishments could not meet the need, and in June steps were taken to find a total of 3,000,000 square feet. By the end of the month the Eighth had secured approximately 750,000 square feet, and another 1,160,000 square feet not yet available had been located. Storage areas fell in general in the neighborhood of the western ports of Liverpool and Bristol, with additional space at Burton-on-Trent northwest of Huntingdon, and in Northern Ireland.¹²¹

With the formal establishment of the Eighth Air Force in the United Kingdom at the end of June, its service organization still remained largely in the stage of planning and construction. The plans had been drawn on an ambitious scale and in keeping with the AAF's

* Langford Lodge, originally conceived by General Brett as performing third echelon maintenance, was now to be a base depot for fourth echelon maintenance.

determination to establish a self-sufficient force. During World War I, American military forces in Europe had achieved organizational and operational independence, but they had remained (and this was particularly true of the air service) dependent upon their allies for much of the equipment and many of the services used. Leaders of the AAF at the outset in World War II had been determined this time to achieve as a general policy logistical as well as operational independence.¹²² Circumstances, of course, were far more favorable to such a policy than had been the case in the earlier war, for our allies now depended heavily upon American production in their own efforts. But the building of a service organization on the scale required for support of so ambitious an undertaking as had been projected for the Eighth Air Force required time, even with the advantage which circumstances fortunately had provided in the opportunity for a certain amount of prewar planning. And so in June 1942, Langford Lodge and Warton would not be ready for months; the Ministry of Aircraft Production installation at Burtonwood would have to carry the main burden until the following year, and only because of this assistance and a variety of other aids provided by the British would it be possible for the Eighth to make its presence felt by the Germans in advance of that time.

Overseas Movement

Meanwhile, the overseas movement of the Eighth, given an added impetus by the decision in favor of ROUNDUP, had begun on 27 April, when advance echelons of the headquarters of the Eighth Air Force and of the VIII Bomber, Fighter, and Base Commands, together with a weather detachment, the 15th Bombardment Squadron (Separate), and the 2d Air Depot Group, comprising in all approximately 1,800 officers and men, sailed from Boston for Liverpool on the transport *Andes*.¹²³ That same day the War Department directed that the air force and all command headquarters, the 97th Bombardment Group (H), the 1st and 31st Pursuit Groups, the 5th Photo Squadron, and the 5th Air Depot Group be prepared for movement overseas not later than 1 June 1942.¹²⁴ Like most AAF overseas deployments, this first movement of the Eighth Air Force was divided into two echelons—ground and air. The bulk of the troops and equipment would proceed by water transport, while the aircraft with skeleton crews would fly by way of the North Atlantic route.¹²⁵

THE ARMY AIR FORCES IN WORLD WAR II

The first shipment reached Liverpool on 11 May, after a two-week voyage. The several headquarters detachments joined the bomber command staff at High Wycombe; the 2d Air Depot Group went to Molesworth, the 15th Bombardment Squadron to Grafton Underwood, whence it moved to Molesworth in June.¹²⁶ Destined to become the first Eighth Air Force unit to enter combat, the 15th Squadron began its training with RAF Bostons instead of the specially equipped night fighters earlier intended for it.¹²⁷

Back in Washington the chief difficulty in moving the main part of the ground echelon was to find the necessary shipping, a problem that was not solved until the *Queen Elizabeth* was made available for an early June trip and the War Department gave to the Eighth a priority for the shipment of 15,000 troops in that month.¹²⁸ During the preceding month, warning and movement orders reached the several headquarters concerned, and from stations throughout the country, but especially from the concentration area in the southeast, the assigned units moved to Fort Dix, where the Eighth Air Force had established its own temporary Staging Area Command to facilitate the final preparations.¹²⁹ The first contingent of about 1,200 men, out of the total of more than 11,000, sailed on 29 May with a slow convoy, which also carried 7,500 tons of Eighth Air Force equipment, and did not reach England until 12 June. The remainder, comprising chiefly the ground echelons of the 97th Bombardment Group, the 1st and 31st Fighter Groups, the 60th Transport Group,* the 5th Air Depot Group, and other service units, left New York aboard the *Queen Elizabeth* on 4 June and arrived in the United Kingdom six days later.¹³⁰ Everything considered, the movement had been completed remarkably close to the date originally set. A critical shortage of shipping continued, but high priorities were accorded additional bomber, fighter, transport, and service units that were to follow during the summer.¹³¹

Even so, the prospect of an early commitment of the Eighth to battle depended upon a plan to fly its planes and aircrews across the Atlantic. This plan, which covered the intended movement of fighters as well as bombers, represented at the time a more daring decision than would be true of any similar action today. In early 1942, AAF pilots were becoming accustomed to long and hazardous overwater flights, but the AAF had not as yet made the idea commonplace. RAF

* Transport units were redesignated "troop carrier" in July 1942.

THE EIGHTH AIR FORCE

pilots had been ferrying bombers across the North Atlantic since 1940, and since the summer of 1941 the Air Corps Ferrying Command had given attention to the development of facilities along the route; but in April 1942, these facilities were still unequal to the demands of such a movement as was now proposed.¹³² And so while General Eaker directed preparations in England and General Spaatz supervised the organization of a force in the United States, the Ferrying Command, under General George, redoubled its efforts to prepare the airway along which so many of the AAF's planes were destined to find their way into combat.¹³³ The route ran from Presque Isle in Maine to Goose Bay in Labrador, then either by BLUE WEST 1 (Narsarssuak) on the southern coast of Greenland or BLUE WEST 8 (Sondre Stromfjord) on the west coast to Reykjavik in Iceland, and thence to Prestwick, the British terminal of trans-Atlantic flights on the west coast of Scotland. The distances involved varied from the 569 statute miles separating Presque Isle from Goose Bay to the grueling 1,002 miles from there to BLUE WEST 8.

It had been decided by the middle of April that the combat groups would fly their own planes—the 97th its B-17's, the 1st its P-38's, the 31st its P-39's—and that the Eighth Air Force would have responsibility for the movement.¹³⁴ To the VIII Fighter Command, under Brig. Gen. Frank O'D. Hunter, General Spaatz assigned control of the entire air movement. Because of the special hazards involved in the dispatch of fighter aircraft on long overseas hops, the B-17's were to be detailed to lead flights of up to six aircraft on each leg of the journey. The pilots, who had been trained for combat rather than for ferrying, required special training, and so it was planned to move all units into a concentration area for the purpose about the middle of May.¹³⁵ Accordingly, on the 15th of that month the three groups were ordered to Grenier Field in New Hampshire and Dow Field in Maine.¹³⁶ During the first week of June, the 60th Transport Group with its C-47's was added to the movement and ordered to Westover Field in Massachusetts, where it, too, came under the control of the VIII Fighter Command.¹³⁷

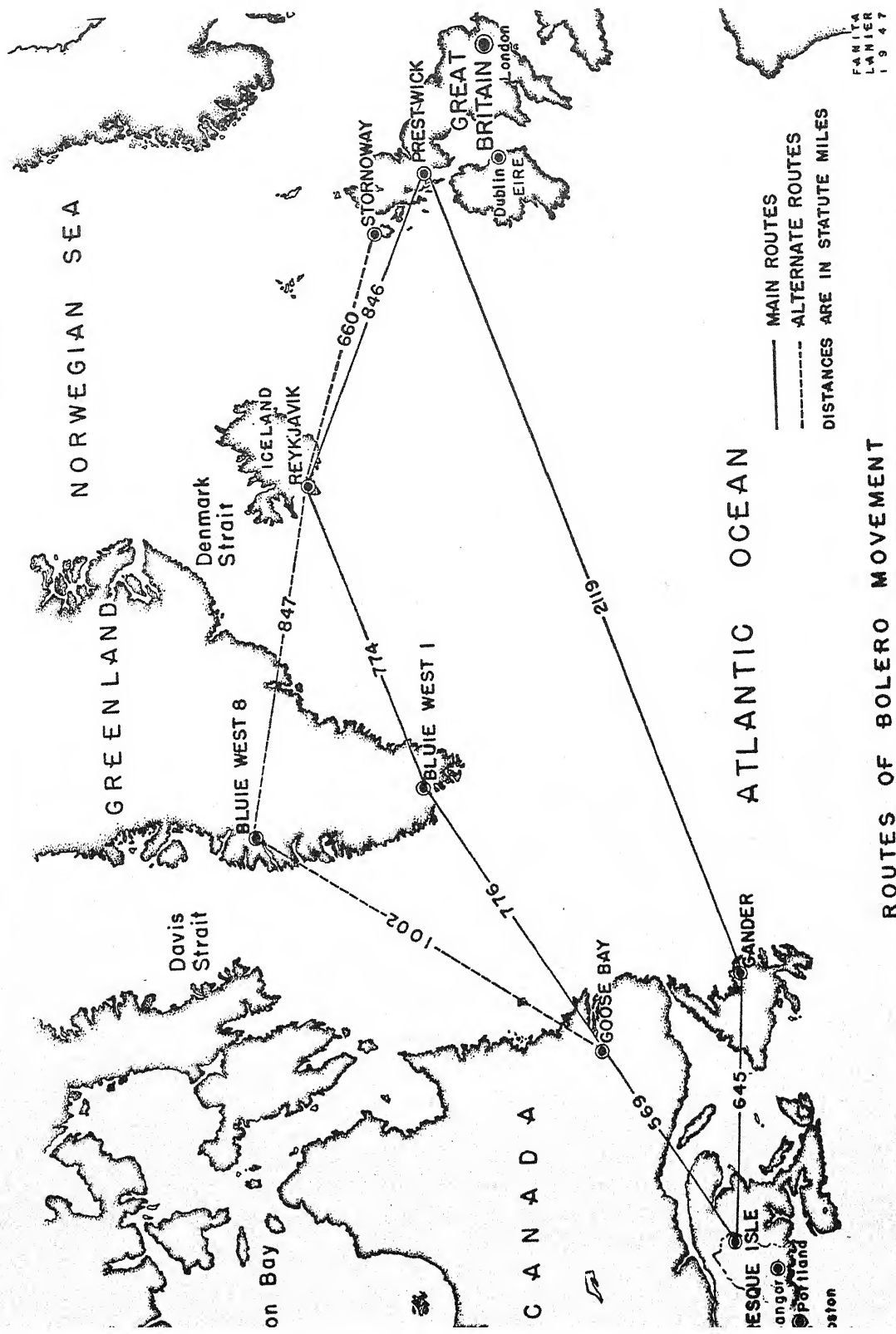
But while the combat units of the Eighth in New England studied the problems and procedures of the projected air movement,¹³⁸ the Japanese fleet steamed toward Midway; and on 1 June, orders went out from Washington suspending the movement of the Eighth and directing that all planes be held on six hours' notice for dispatch to a

new destination.¹³⁹ The critical hour had come in the Pacific, and all available planes were moving west—west from Hawaii to Midway, from Hamilton and March to Hickam, and westward across the North American continent to fill the vacuum created on the Pacific coast by departures for Hawaii and the Aleutians, where the enemy also was expected. On 2 June the War Department ordered the 97th Bombardment Group and the 1st Fighter Group to the West Coast on assignment to the Western Defense Command.¹⁴⁰ They would be released in approximately a week from this new assignment,¹⁴¹ and would return to New England from the Pacific coast to resume preparations for their trans-Atlantic movement, but the resultant delay occasioned by this emergency cost at least two weeks.*

The 31st Fighter Group had been ordered on 4 June to proceed to England, but without the B-17's of the 97th to lead the P-39's across it was not considered practicable to move the unit by air.¹⁴² And so the 31st went by water, and having left its planes in the United States for the lack of space, it reached England by the middle of June to take up its station at Atcham and High Ercall west of Huntingdon.¹⁴³ In lieu of the P-39's left behind, the unit promptly acquired RAF Spitfires, in which it began training almost at once.¹⁴⁴ Thus it came about that the first complete American combat group in the European theater entered battle with British planes. It was not alone in this particular for it was followed in July and August by the 52d Fighter Group, which also made its movement by water and was equipped in the theater with Spitfires.¹⁴⁵

Meantime, preparations had been pushed for the delayed movement of the 97th, the 1st, and the 60th. On 15 June, General Spaatz, stopping at BLUE WEST 1 in his flight across the North Atlantic, advised Arnold by radio that all B-17's not needed for escort of the P-38's should proceed without delay, and that the pursuits should follow not later than 21 June, by which time the C-47's should also be ready.¹⁴⁶ On the 18th the VIII Fighter Command from its temporary headquarters at Grenier Field issued orders for the movement:

* On 2 June, the 97th left the concentration area and flew across the country in two separate elements, one to McChord Field, Washington, by way of Mitchel Field, Ft. Leavenworth, and Boise; and the other to Hammer Field, Fresno, California, by way of Scott Field and Albuquerque. On 11 June both elements left the Pacific coast, and by 18 June they had returned to their stations at Grenier and Dow fields. The 1st Fighter Group left Dow Field on 5 June and flew to Morris Field, North Carolina, on the first leg of its journey to the west. On 6 June it was ordered to return to Dow Field and departed for there on the same day.



— MAIN ROUTES

- - - ALTERNATE ROUTES

DISTANCES ARE IN STATUTE MILES

1947

ROUTES OF BOLERO MOVEMENT

all planes—forty-nine B-17's, eighty P-38's, and fifty-two C-47's—would proceed to Presque Isle, where they would be organized for the movement into squadrons of three flights each, each flight to comprise two elements, and each element to consist of one B-17 and four P-38's. The B-17's not required for escort under this arrangement also would make the flight in small elements.¹⁴⁷ The hardy C-47, as befitted its mission, in addition to getting itself to England, would carry a cargo of freight.

The first planes, eighteen B-17's, took off from Presque Isle on 23 June for Goose Bay, where before the day was over all of the big bombers had come in.¹⁴⁸ Three days later these planes left for BLUE WEST 1 and 8, but only nine reached their destination safely, six having turned back to Goose Bay and the other three having been forced down along the coast of Greenland. The crews of the wrecked bombers were all saved, but weather and communications were fully revealed as the major difficulties governing the use of the route. Also on 23 June the first flights of P-38's safely negotiated the initial leg from Presque Isle to Goose Bay. Additional flights proceeded, as weather and other circumstances permitted, without mishap until 15 July, when six P-38's and two B-17's came down on the ice cap on the eastern coast of Greenland. For this misfortune, which all crews survived, unfavorable weather and misleading directional broadcasts by the enemy were blamed.¹⁴⁹ On 1 July, B-17 No. 19085 landed at Prestwick. Except for the arrival of a single B-24 in May, it was the first American-operated tactical aircraft to reach the United Kingdom in World War II.¹⁵⁰ Twenty-six days later, Col. Newton Longfellow brought into the British terminal the last planes of this first BOLERO air movement.¹⁵¹ The AAF had estimated that losses would run as high as 10 per cent;¹⁵² yet despite extremely unfavorable weather which seriously delayed the movement,¹⁵³ it had been accomplished with the loss of few planes and with no serious injury to personnel.

A second movement followed hard upon the first, so close, in fact, as already to suggest the parallel of a pipeline extending from Presque Isle to Prestwick. The ground echelons of the 92d and 301st Bombardment Groups (H), of the 14th Fighter Group, and of the 64th Troop Carrier Group had moved to the port of embarkation in July and left for the United Kingdom late that month and in early August.¹⁵⁴ Simultaneously, their air echelons moved into a north-eastern concentration area preparatory to a take-off from Presque

Isle as soon as the other movement had cleared the field there. The way was clear by 22 July, when twenty-eight P-38's of the 14th Group escorted by six B-17's flew from Presque Isle to Goose Bay. The other planes followed in a continuing movement that was distinguished chiefly by the pioneering effort of the 92d Group in accomplishing between 15 and 27 August the nonstop flight of all four of its squadrons from Gander in Newfoundland to Prestwick without the loss of a plane.¹⁵⁵

By the end of August, 386 aircraft—164 P-38's, 119 B-17's, and 103 C-47's—had crossed to England by the North Atlantic ferry route. Additional groups and replacement aircraft for the Eighth and Twelfth Air Forces would follow during the remainder of the year; all told, 920 planes by 1 January 1943 had attempted the crossing and 882 reached their destinations, of which approximately 700 belonged to the Eighth. The anticipated accident ratio of 10 per cent did not materialize—it actually amounted to 5.2 per cent. Of the 38 planes failing to reach Prestwick, 29 were classified as "wrecked" and 9 as "lost." The AAF had been particularly anxious about the P-38's, but out of 186 dispatched during 1942 only 7 failed to reach their destination; in addition to the 6 wrecked in July, 1 was subsequently lost.¹⁵⁶ And before passing on, it should be noted that nearly all of the 700 planes delivered to the Eighth were flown by their own combat crews, not by veteran and highly trained ferry or transport pilots.

As the movements developed, the principal concern of AAF leaders in England was over the slowness of the initial movement and the prospect that winter would cut off this line of reinforcement. They hoped that improvement of communications and weather facilities would permit not only bombers but fighters to make the flight, but Headquarters, AAF felt the risks were too great. After December, the North Atlantic route was closed to virtually all planes until spring.¹⁵⁷

Establishment in United Kingdom

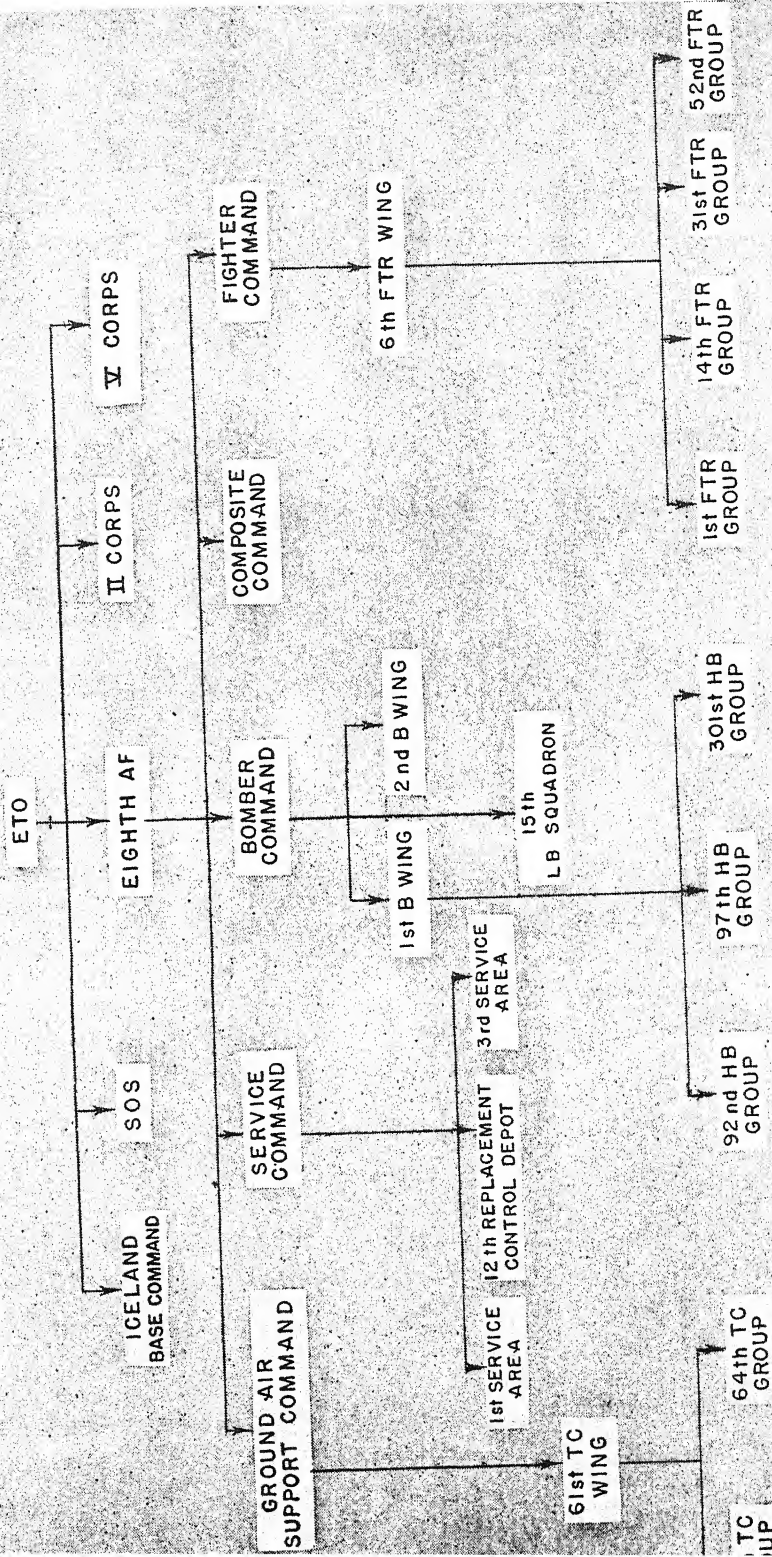
The period extending from the opening of General Spaatz' headquarters in the United Kingdom on 18 June¹⁵⁸ to the first heavy bomber mission on 17 August saw the completion of the initial stage in the development of the Eighth Air Force. Its headquarters—in code WIDEWING—was located in the suburbs southwest of London at Bushy Park, Teddington. During the latter part of June and in July, the newly established headquarters gathered into its hands the

reins of command and assumed the responsibility for planning which theretofore had belonged chiefly to the VIII Bomber Command.¹⁵⁹

It is not surprising that the VIII Bomber Command under General Eaker was in many ways further advanced than were any of the other commands, for its staff enjoyed by far the widest experience in coping with problems peculiar to the theater. Already in mid-June the bomber command had taken a significant step toward the development of adequate machinery for the control of combat operations by establishing the Provisional 1st Bombardment Wing at Brampton Grange under the command of Col. Claude E. Duncan, who had been in the theater since January.¹⁶⁰ Still another step came on 27 July with the full-fledged activation of both the 1st and 2d Bombardment Wings; the command of the latter, at Old Catton in Norfolk, was given to Col. Newton Longfellow, who on that day landed at Prestwick to complete the first BOLERO movement.¹⁶¹ There would be some reshuffling of the paper over the next few weeks: the two wings were dependent upon action in the United States for provision of necessary headquarters personnel, and headquarters and headquarters squadrons meanwhile having been established in the States for each of the wings, the theater organizations were redesignated "provisional" in August and re-established on a permanent basis in September.¹⁶² But all this was for the sake of the record; at the end of August the 97th, 301st, and 92d Groups had been assigned to the 1st Wing,¹⁶³ while the 2d Wing awaited the early arrival of its headquarters squadron and additional combat groups.

Arnold and Portal had agreed in May that the American fighter units would be stationed at first with RAF fighters in southern England. General Hunter's headquarters, accordingly, was opened on 28 July, shortly after his arrival in the theater, at Bushey Hall, Watford, on the outskirts of northwest London and within easy reach of the headquarters of the RAF Fighter Command.¹⁶⁴ There were four American fighter groups in the theater a month later, all of them—the 1st and 14th with their P-38's and the 31st and 52d with Spitfires—stationed on RAF fields and already showing progress in the mastery of RAF procedures and techniques of control.¹⁶⁵

The VIII Ground Air Support Command under Brig. Gen. Robert C. Candee did not open its headquarters at Membury in Berkshire, about fifty miles west of London, until 17 August, after close study of RAF organization for air-ground co-operation.¹⁶⁶ Its mission being



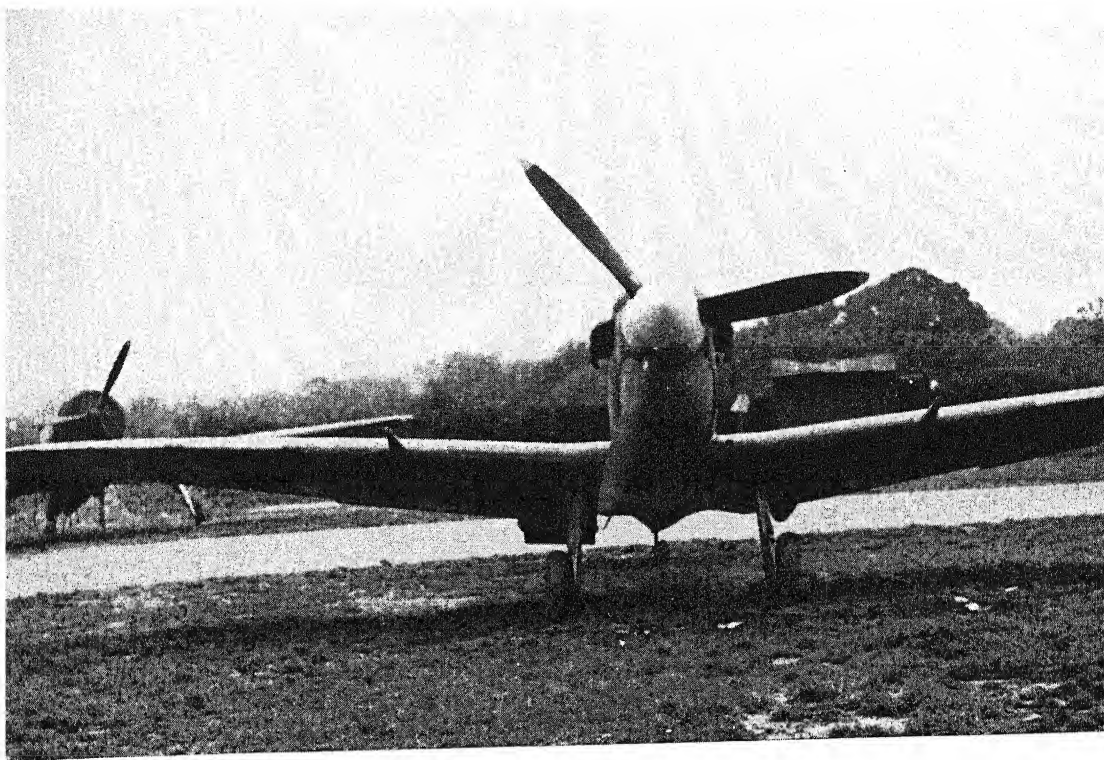
ORGANIZATION OF EIGHTH AIR FORCE
AS OF AUGUST 1942

that of preparation for the support of ground operations not yet definitely scheduled, the command at the time had only one unit assigned to it and that, the 15th Bombardment Squadron, was actually attached to the VIII Bomber Command for its current operations.¹⁶⁷ In August the VIII Ground Air Support Command took control of a troop carrier wing whose two groups, the 60th and 64th, were stationed at Aldermaston and Ramsbury, both places in the vicinity of Membury.¹⁶⁸

Under Brig. Gen. Charles C. Chauncey, the VIII Air Force Composite Command in September set up temporary headquarters at Long Kesh, an RAF station southwest of Belfast.¹⁶⁹ It carried forward plans for an ambitious program of training, but it would remain for over a year without a job to do beyond that of planning. While the Eighth remained a relatively small organization, operational training continued to be predominantly a unit affair conducted on the home bases of the several groups.

Maj. Gen. Walter H. Frank and the headquarters of the VIII Air Force Service Command arrived early in July. Because its responsibility for supply and maintenance included every element in the Eighth Air Force, the service command's relationship to the force headquarters and to the several commands was both close and constant. Consequently, General Frank, who as commanding general of the Third Air Force had been actively identified with the origins of the Eighth, set up his headquarters at Bushy Park.¹⁷⁰ The need for close co-ordination between the VIII Air Force Service Command and its parent organization was thus recognized in their close physical proximity; the same need would result in 1944 in the integration of the two headquarters into a single operational and logistical organization. Meanwhile, in August 1942 the service command established two subcommands, known as service areas, for the direction of activities respectively in Ireland and in England and Wales.¹⁷¹ Under the service command, too, the 12th Replacement Control Depot took over responsibility for receipt and process of incoming casual and filler personnel. Its stations at Stone in Staffordshire and Chorley in Lancashire would become familiar to hundreds of thousands of air force officers and enlisted men during the next three years.¹⁷²

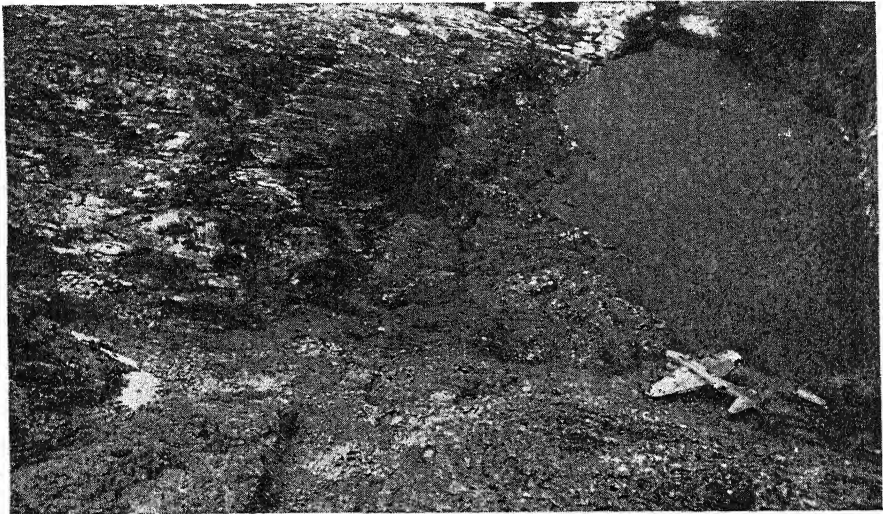
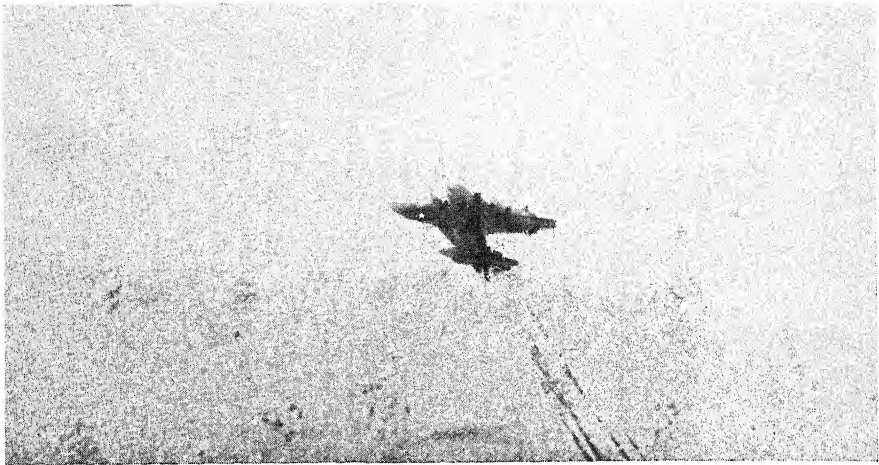
The European Theater of Operations United States Army (ETOUSA) having replaced USAFBI shortly before the assumption of the new command by Maj. Gen. Dwight D. Eisenhower on 24



THE SPITFIRE MK-5

THE SPITFIRE MK-5, SIDE VIEW





THE EIGHTH AIR FORCE

June, General Spaatz on 21 August was assigned additional responsibilities as theater Air Officer.¹⁷³ Over and above the special assurance thus provided of the active participation of air officers in theater planning at its highest level, the step marked the beginning of a close personal relationship between Generals Eisenhower and Spaatz which contributed greatly to the successful development and employment of American air power in the war against Germany. The Eighth Air Force had been assigned to the theater's command, and already a directive of 21 July to General Spaatz had gone far toward clarifying the main outlines of the relationship thus established.¹⁷⁴ That relationship naturally reflected something of the new status of semiautonomy attained by the AAF within the Army, as well as some of the difficulties inherent in a status which required sharper definition.

In the attempt to work out a practical definition suited to the requirements of the European theater, primary importance attached to questions of supply. Maj. Gen. John C. H. Lee having been selected for command of the theater Services of Supply (SOS), which was on an organizational level with the Eighth Air Force, conferences between him and key figures of the VIII Air Force Service Command prior to their departure from the United States went far toward fixing the basic policies that would be followed after the opening of General Lee's headquarters in England on 24 May.¹⁷⁵ The SOS would be responsible for all problems of construction, for debarkation activities, and for the supply of items common to both ground and air forces. In addition the theater retained the final authority for determining priorities for shipping from the United States. Under the over-all logistical control of the SOS, however, the VIII Air Force Service Command held primary responsibility for all supply and maintenance peculiar to the air force.¹⁷⁶ The decision in effect conceded to the AAF in Britain a substantial degree of logistical autonomy; yet in a matter as vital as airdrome construction VIII Air Force Service Command could act only through SOS.¹⁷⁷ A certain amount of friction was unavoidable, and though individual differences usually could be settled by agreement, the fundamental difficulty continued. A natural goal of AAF personnel became the establishment of a service command independent of SOS and on the same echelon of command.¹⁷⁸

In July the details of a master plan for the occupation and development of an VIII Bomber Command sector were worked out with

the British. This plan provided for the ultimate occupation of five areas, each of fifteen airdromes, in the region extending eastward from Huntingdonshire through East Anglia.¹⁷⁹ The shortage of British labor had made necessary the provision of American aviation engineer battalions. They were slow in arriving and sometimes came without their equipment, but a similar delay in the build-up of combat units served to prevent the development of any immediate crisis.¹⁸⁰ As construction at Langford Lodge and Warton fell behind schedule, Burtonwood assumed increasing importance and some of Lockheed's civilian recruits went to work there on their arrival in July pending the completion of facilities in Ulster.¹⁸¹ In addition to Burtonwood, there were now added three small special depots for Chemical Warfare and Ordnance at near-by Poynton, at Sharnbrook in Huntingdonshire, and at Barnham in East Anglia. Still dependent largely on storage space made available temporarily at RAF stations, the Eighth in July refigured its long-range requirements at 4,000,000 square feet, much of it to be provided through the new depot construction program.¹⁸²

Of immediate concern was the question of advance air depots for the bomber sector. It had been proposed in June that one mobile air depot should be established for every three operational airdromes, and early in July, General Spaatz, on the basis of the currently anticipated flow of combat units, was thinking in terms of twenty mobile depots for the entire air force.¹⁸³ It was decided in August, however, to impose a heavier burden on the individual airdromes and the base depots, and on the suggestion of General Frank it was decided to provide only three advance depots, two for the bomber command and one for the fighter command, with the additional provision of such genuinely mobile depots as might be required during intensive periods of operation.¹⁸⁴ The service command selected Honington and Watton, both in East Anglia, as sites for the bomber areas; a final decision in the case of the fighter command awaited settlement of the more fundamental question of its mission and location.¹⁸⁵ Thus the advance air depots which in 1943 became a functioning part of the Eighth Air Force were considerably larger than the traditional mobile air depot on which they originally had been patterned.

It will be readily apparent that in August 1942, while great progress had been made over the preceding six months toward the establish-

ment of a well-rounded American air organization in England, the Eighth Air Force remained heavily dependent upon the RAF. For some time yet, much of the heavy repair work on its engines, airframes, and propellers would be done by RAF No. 24 Maintenance Unit and by British workmen at Burtonwood, and all of the salvage work, of importance at a time when planes and spare parts were scarce, by RAF No. 43 Group.¹⁸⁶ When because of the shortage of shipping and other difficulties AAF units arrived without their organic equipment and supplies, the RAF furnished hundreds of items—ammunition, bombs, vehicles, tools, spares, flying clothing—to supply the deficiencies. Again, when for the purpose at hand certain items of British equipment, for example, pyrotechnics, synthetic training devices, dinghies, and certain items of radio and electrical equipment, were found to be superior to that of the Americans, the British made their procurement possible. When unanticipated requirements for new equipment and new types of supplies arose from operational needs, the British provided them or assisted in securing their manufacture in the United Kingdom.¹⁸⁷ In addition, the RAF continued to provide training as required for aircrews, ground crews, technicians, and other specialists.¹⁸⁸

By way of summation, the historian can do no better than to quote from the warm tribute of General Eaker in his report to General Spaatz of 19 June on the "Work of the Advance Echelon."¹⁸⁹ The British, he wrote,

in whose theater we have been understudying and operating for the past five months, have co-operated one hundred per cent in every regard. They have lent us personnel when we had none, and have furnished us clerical and administrative staffs; they have furnished us liaison officers for Intelligence, Operations and Supply; they have furnished us transportation; they have housed and fed our people, and they have answered promptly and willingly all our requisitions: in addition they have made available to us for study their most secret devices and documents. We are extremely proud of the relations we have been able to establish between our British Allies and ourselves, and we are very hopeful that the present basis can be continued, and that all incoming staff and tactical commanders will take the same pains we have to nurture and maintain the excellent relations which now exist.

Implicit in all of the arrangements being made in the United Kingdom was the belief that the build-up of American air power in the European theater would take place within the time and on the scale proposed in the spring of 1942 by way of preparation for Operation ROUNDUP. To complement this strategic plan for the invasion of

western Europe in the spring of 1943, a plan for the build-up and accommodation of American forces in the United Kingdom had been initiated in late April under the code name of BOLERO.¹⁹⁰ Combined committees of British and American members, their province falling entirely in the field of logistics, were set up in Washington and London to expedite arrangements for the build-up. Composed of key staff officers of the several planning agencies concerned, these committees served to co-ordinate the effort on the highest level.

With April 1943 set tentatively as the target date for ROUNDUP, the Operations Division of the War Department and AAF Headquarters in May 1942 drafted plans to place by that time 1,000,000 American troops in the United Kingdom. The troop basis was broken down to provide 525,000 ground troops, 240,000 air force troops, and 235,000 for Services of Supply.¹⁹¹ Within the limit thus set, the AAF by 13 May had developed a "Rough Estimate-Tentative" which called for the placing in the United Kingdom prior to 1 April 1943 of twenty-one heavy bombardment groups, eight medium bombardment groups, nine light bombardment groups, seventeen pursuit groups, six observation groups, and eight transport groups—the grand total being sixty-nine groups plus supporting service units.¹⁹² As the figures themselves indicate, the force would represent a balance between the requirements of a previously planned program of strategic bombardment and of the tactical operations to be expected in the actual invasion of Europe.

A further development and refinement of these studies enabled General Arnold during his conferences with Air Chief Marshal Portal in late May to present a "Programme of Arrival of U.S. Army Air Forces in the United Kingdom" which provided for a flow into the theater by March 1943 of sixty-six combat groups, exclusive of observation squadrons, and of 3,649 airplanes. The breakdown had been adjusted as follows: for bombardment, nineteen heavy, twelve medium, and twelve light groups; for pursuit, fifteen groups; and for transport, eight. The proposed build-up would advance from fifteen groups in July to thirty-five in November and to sixty-six in March. General Arnold anticipated that by 1 April 1943 the Eighth would have in combat units 700 heavy bombers, 800 medium bombers, 342 light bombers, and 960 fighters.¹⁹³ At the time of General Arnold's departure from London for home on 2 June 1942, the actual strength

of the Eighth Air Force in the United Kingdom was a mere 1,871 troops and no American aircraft.¹⁹⁴

By the first of July, a reappraisal of possibilities in the light of new demands from other theaters had brought a downward revision of the BOLERO build-up to a total of fifty-four groups less transport units, and to 194,332 men. The main strength of the Eighth would be concentrated in seventeen heavy and ten medium bombardment groups; fighter groups had been reduced to thirteen and light bombardment to three.¹⁹⁵ These figures served as the basis upon which plans for the organization and accommodation of the Eighth were drafted during its first weeks in the United Kingdom. Even with the reductions forced by considerations of shipping, production, training, and the demands of other theaters, the proposed build-up underscored the ambitious scale on which leaders of the AAF projected plans for their major effort.

An attempt by AAF Headquarters during early July to extend its estimate of the BOLERO build-up to 31 December 1943 lends still greater emphasis to the point. Planners estimated that the total number of groups by that date would stand at 137, or approximately half of the currently projected strength of the AAF. There would be seventy-four bombardment groups (forty-one heavy, fifteen medium, thirteen dive, and five light), thirty-one fighter groups, twelve observation groups, fifteen transport groups, four photo groups, and one mapping group, and a total of 375,000 men, of which 197,000 would serve in tactical units and 178,000 in the various service organizations.¹⁹⁶ The estimate proved to be remarkably close, particularly with regard to the heavy bomber force, to the actual strength established in the United Kingdom in advance of the invasion of 6 June 1944, though the figures given for the number of groups were high and for the total of personnel low.

In London during July the BOLERO committee continued its work on plans calling for the accommodation of 195,000 air force troops, 556,000 ground troops, 259,000 SOS troops, and 137,000 replacements, of whom 35,000 would belong to the AAF—all to be placed in the United Kingdom by the end of March 1943.¹⁹⁷ But at the end of July, as has been noted elsewhere, it had been decided to abandon SLEDGEHAMMER,* to mount instead TORCH, and to postpone ROUNDUP, probably until 1944. The BOLERO commit-

* See above, pp. 572-73.

tee thus found its work reduced to an academic status, except insofar as it provided assistance in the planning for an invasion of Northwest Africa and for distant objectives in the United Kingdom.

Even before the first heavy bomber mission of the Eighth could be flown, Operation TORCH had cast its shadow over the hopes of the AAF for a major share in the strategic bombardment of Germany. It would be the chief task of the Eighth Air Force through the ensuing weeks to prepare the Twelfth Air Force for the invasion of Africa. JUNIOR was the name pinned on the new air force, but JUNIOR would outgrow its parent and less than three months after Mission 1 of the VIII Bomber Command, General Spaatz could well ask: "What is left of the Eighth Air Force after the impact of TORCH?"¹⁹⁸

CHAPTER 18

* * * * *

ROUEN-SOTTEVILLE

NO. 1, 17 AUGUST 1942

THE Eighth Air Force flew its first mission in an atmosphere charged with curiosity, impatience, and skepticism. American air planners held the tactical feasibility of daylight strategic bombardment as a fundamental hypothesis, and on it they had based their entire plan for an air offensive against Germany; but it had yet to be demonstrated under combat conditions in the European theater. The hypothesis had yet to be proved not only to sympathetic observers in the AAF but to those, especially in Great Britain, who had no reason to believe that precision bombing by daylight could add significantly to the bombardment program, and who, on the basis of certain early and unfortunate experiments with the Flying Fortress, were inclined to doubt the virtues of the American plan and the capacity of the American equipment. Not unnaturally, then, the AAF was impatient to put its ideas and its planes to the test, and British observers awaited that same moment, their interest tinged with politely expressed skepticism.

Preparation for Combat

Two things in particular contributed to the impatience of the Eighth Air Force commanders. In the first place, their units were slow in arriving. As a result of delays probably inevitable at that stage of mobilization in the United States, it was not until 27 July that a single heavy bombardment group became available complete with air and ground echelons.¹ In the second place, the new units were found to need more training in the theater than had originally been planned. Some such training had been considered necessary in order to acquaint pilots and crews with British control methods, the topog-

raphy of the British Isles and adjacent areas, and the vagaries of the weather over the Channel and the North Sea. Some had hoped that this familiarization process might be completed in a couple of weeks. As it happened, however, crews arrived in the United Kingdom with inadequate experience in almost all essential skills. Their training had consequently to be completed in the theater at the expense of an extra two weeks' delay.²

The 97th Bombardment Group under Lt. Col. Cornelius W. Cousland, the first of the heavy bomber units to arrive in the United Kingdom, had focused on it the attention and hopes of all those most concerned with the projected day bomber offensive. Regretfully, General Spaatz had decided to send it to the theater as soon as it was organized and equipped and sufficiently trained to negotiate the ferry route. The advisability of getting its crews into the United Kingdom outweighed the desirability of more thorough training before departure.³ But this meant that crews arrived with little or no experience in high-altitude flying. Pilots and co-pilots had received little instruction in flying formations at any altitude, to say nothing of maintaining tight formations at the extreme altitudes planned for day bomber missions. Many of the radio operators could neither send nor receive the Morse code. Worse yet, the gunners proved to be almost completely unfamiliar with their equipment. Many of them had had little or no opportunity to shoot at aerial targets, and several had never operated a turret in the air. This deficiency was especially disturbing to the Eighth Air Force experts because they felt sure that the ability of the heavy bombers to destroy enemy targets by daylight without prohibitive loss would depend in large part on their ability to defend themselves against enemy fighters.⁴

Warned in advance of this state of affairs, General Eaker's VIII Bomber Command headquarters had taken steps to set up a coordinated training program covering all aspects of bomber operations, but concentrating especially on formation flying, bombing, and gunnery. In order to prepare for intensive gunnery training, it had procured gunnery range facilities, expert liaison officers, and a few tow-target planes from the British and had sent one officer to study British methods of gunnery instruction. These preparations made it possible to start work on the tactical units as soon as they arrived. But the deficiency in gunnery was not a thing that could be overcome

in a day, and results of practice against aerial targets continued to be disappointing.⁵

Similar difficulties attended the introduction of American fighter units into the United Kingdom. The 31st Fighter Group, commanded by Maj. J.R. Hawkins, began training at Atcham on 26 June. Inspection by British and American authorities revealed at that time deficiencies in gunnery, formation flying, navigation, combat tactics, and, in some cases, instrument flying. The pilots had also to be trained in British operating procedures, in flying at the maximum cruising speeds necessary for operations over enemy territory, and in the difficult task of assembling and navigating large formations at extremely low altitudes—a necessary procedure in avoiding detection by enemy radar. In addition to these training problems, the new unit was handicapped by a radical change of equipment. Initially trained on P-39's, it was required to convert to Spitfires, a process which was not completed without a number of accidents. In order to facilitate conversion to the British equipment, six of the group's ranking pilots were detached for operational experience with a Canadian squadron.⁶

Despite unfavorable weather and congested facilities, the 31st Group received intensive training. RAF Bomber Command lent its assistance and, as training progressed, AAF element, flight, and squadron commanders were attached temporarily to British units, with which they flew a few fighter sweeps as wingmen. By mid-August the group was fully operational and had been transferred to the south of England in preparation for initial operations under RAF control. Each of the three squadrons was attached for this purpose to separate wings of RAF No. 11 Group until they had gained enough combat experience to be able to fly as a group. Although other American fighter units were beginning to arrive in the theater, the 31st remained at this time the only one on fully operational status. There were, of course, three RAF squadrons—the famous Eagle squadrons—composed of American volunteer pilots. These flyers were transferred to the AAF in September 1942, forming the 4th Fighter Group.⁷

Intensive as the training of the new fighter units had been, it was clear by the middle of August that they were as yet neither numerous enough nor sufficiently seasoned to provide the cover necessary for the first bomber missions. Fighter escort, on a relatively large scale, was considered essential to the success of the day bomber campaign, and it was planned to use extensive cover on the initial missions and

until it might be demonstrated that the bombers could look after themselves in combat with enemy fighters. Policy concerning the provision and control of fighter escort had not yet been determined, but it was apparent that RAF units would have to do the lion's share of the work for some time to come.⁸

The Mission of 4 July 1942

Curiously enough, the first American unit to achieve operational status and to engage in combat was neither a heavy bomber nor a fighter outfit but a squadron of light bombers, the only one of its kind among the U.S. forces then in the United Kingdom. The 15th Bombardment Squadron (Separate), commanded by Maj. J.L. Griffith, had arrived in the theater in May 1942 and immediately had been set to training on American-built Bostons belonging to RAF No. 226 Squadron. The British contributed even more to the training of this than to the other American units. Through lectures and direct instruction, they gave the AAF pilots the benefit of their long experience in conducting light bomber missions. Gunners were sent to the RAF gunnery flight for courses in gunnery and combat technique, and the ground crews were sent to RAF stations to observe maintenance methods. By the latter part of June, a number of crews had progressed far enough, especially in pilotage, to be considered combat-worthy.⁹

It was consequently decided to put a few of the crews into combat at the earliest opportunity. Doubtless in order to initiate the American flyers into combat at the most appropriate moment, the date of the first mission was tentatively set for the Fourth of July. On the 2d, General Eaker accompanied General Eisenhower to Swanton Morley, where the 15th Squadron was training with an RAF group, personally to consult the pilots who were to take this first dramatic step. As a result of the eagerness of the crews and the confidence in the ability of the American pilots expressed by the RAF commander under whose eye they had trained, it was decided then that six crews of the 15th Squadron would on 4 July join six crews of the RAF in a daylight attack at minimum altitude against four airdromes in Holland.¹⁰

Tactically speaking, the mission was a failure, at least as far as the American crews were concerned. It was carried out as planned, but only two of the six planes flown by the Eighth Air Force crews dropped their bombs over their assigned targets. The rest of the pilots

failed to recognize their objectives in time to attack or else ran into such stiff opposition that they could not bomb. Two planes were shot down by flak and one was badly damaged. The British lost one plane, evidently as a result of flak damage plus the attentions of the only enemy fighter to make effective interception that day. But the American losses did not stem entirely from the inexperience of freshmen crews, although one of the pilots shot down was reported to have taken insufficient evasive action in the flak area. The fact was that for some reason the mission ran into very heavy opposition from anti-aircraft batteries, especially at the two northern airdromes of De Kooy and Haamstede. It even seemed to the surviving crews that the enemy gunners must have been warned in advance by ships in the Channel which had sighted the Bostons on their trip toward the Dutch coast. The RAF leader of the element attacking De Kooy reported the worst flak in his experience, and over-all losses in this one mission were declared to have been equal to the total losses of No. 226 Squadron in similar operations for the preceding five and one-half months.¹¹

During the mission, however, one incident occurred which proved heartening to the American force and which did much to offset the otherwise discouraging results. Capt. Charles C. Kegelman, flying with the element detailed to bomb De Kooy airdrome, had his right propeller shot away by flak while in the vicinity of the target. The ground fire also damaged his right wing and started a fire in his right engine. Kegelman's plane lost altitude and actually struck the ground, but he was able to keep it in the air after it bounced back up. Then, as he was preparing to leave the scene as fast as his one good engine would take him, he saw the gunners of a flak tower swinging their guns on him. Turning slightly, he flew directly at the tower and opened fire with the nose guns at close range. Fire from the tower ceased. He then proceeded to fly home at water level. For this exploit, he was awarded the Distinguished Service Cross.¹²

The mission of 4 July had not been an ideal operation with which to inaugurate the American air offensive from the United Kingdom. Not only was it a small raid and one flown in borrowed planes, but it was tactically of little significance since the future of the bomber campaign depended on the development of high-altitude heavy bombardment techniques rather than those of low-level attack by fast, light planes. Nevertheless, the mission marked a beginning of a sort and did much to stimulate morale among the American flyers. At

least the enemy had been engaged and blows exchanged, and it did not matter a great deal that the enemy had distinctly the better of the trade.

On 12 July 1942 the 15th Squadron executed another six-plane attack, this time on the Abbeville-Drucat airdrome. Out of well-founded respect for German flak defenses, this second daylight mission was carried out at medium altitude (8,500 feet) rather than at low level. All aircraft returned without casualties, although two of them suffered some flak damage. During the next few weeks the unit received its own planes, A-20's, and was engaged mainly in putting the new equipment into operational shape.¹³

The Heavy Bombers Complete Their Training

Meanwhile, during the first two weeks of August, the heavy bomber crews of the 97th Group, now under Col. Frank A. Armstrong, Jr., were rapidly overcoming the handicaps under which they had begun their training. The training program progressed so well that by the 15th of that month twenty-four crews were declared available for daylight bombing missions.¹⁴ In addition to an improved grasp of such essentials as gunnery, bombing, navigation, and high-altitude formation flying, these crews were learning their trade in other important respects—how to use oxygen as an aid rather than as something to be feared, how to guard against frostbite in the bitter cold at extreme altitudes, how to evade enemy fighters by skidding, corkscrewing, undulating, and turning into attacks, and how to avoid flak by changes in direction and altitude. Practice missions were conducted in co-operation with RAF Fighter Command for the purpose of giving the bomber pilots experience in making exact rendezvous with their fighter escort. These practice operations also revealed a great deal about the performance of the B-17 and its equipment under conditions more nearly like those to be expected in combat over northwestern Europe than any yet encountered. Barring some trouble with the gun mechanism at very high altitudes (the guns tended to become stiff and heavy to operate in extremely low temperatures, and sometimes failed to fire) and except for the fact that the B-17E lacked the firepower straight ahead that characterized its other fields of fire, the Fortress appeared combat-worthy.¹⁵

Large question marks remained, of course, and were not likely to be removed until the bombers were tested in actual combat. Not until

then, for example, could it be determined whether the additional armament and armor added to the B-17 in order to protect it from fighter attack would, by slowing it down, render it correspondingly vulnerable to anti-aircraft fire. This problem was only one of many at this early date facing the exponents of daylight bombing. In each, a delicate balance had to be sought between the requirements of defense against flak, defense against fighters, and accuracy of bombing. High-altitude flying was believed essential for purposes of avoiding flak, yet it was agreed that the higher the altitude the lower would be the degree of accuracy possible in bombing. Under ideal conditions, bombing by individual planes or by elements appeared to offer the best chances of accuracy, yet the mutual fire support provided by a relatively large group of bombers would aid greatly in defending the bombers from fighter attack. These and other dilemmas, their outlines as yet only dimly discernible, were to govern the tactical development of the American bomber force.¹⁶ And in each case the nature of the compromise adopted could be determined only on the basis of experience gained in combat.

On the night of 9 August, a wave of excitement swept the 97th Group. An order had been received alerting the crews for a combat mission. Ammunition was loaded and preparations made for the big event. But the weather refused to co-operate, and the mission was canceled. Weather conditions—which were to provide one of the gravest obstacles to daylight precision bombing—continued unfavorable for the next week. Finally, on the night of 16 August, an alert was again called. This time the weather held.¹⁷

Rouen-Sotteville No. 1, 17 August 1942

The mission for the 17th was to be small, involving in all only eighteen bombers. Twelve were to attack the marshalling yard at Rouen, flying under heavy fighter cover provided by RAF Spitfire squadrons, while the remainder flew a diversionary sweep along the coast. But, small as it was, this mission commanded the attention of both American and British airmen as few larger undertakings had done. General Spaatz was at Grafton Underwood to watch the Fortresses take off, and with him were a number of staff officers from both the Eighth Air Force and the RAF. With him also were some thirty members of the U.S. and British press. Everyone shared in the excitement and tension of the moment. The crews of the 97th, their

morale having worn thin from repeated "dry runs," stretches of bad weather, and a frustrated desire to have at the enemy, needed badly the stimulus that a successful mission would give them. Generals and staff officers, conscious of public impatience at home for action in the European theater and aware especially of the long-range strategic planning that hinged on the successful initiation of daylight bombardment, watched with intense interest not unmixed with concern. As for the press, its representatives accurately sensed a good story in the making.¹⁸

At 1539 hours the twelve attacking planes were in the air, with General Eaker riding in the *Yankee Doodle*, lead bomber of the second flight of six. For over three hours privates and generals waited at the base for the return of the Fortresses, sharing alike the common suspense. Shortly before 1900 hours, watchers on the control tower spotted a cluster of specks to the west of the airdrome—twelve of them. At exactly 1900 the first B-17 settled down on the runway, followed by the others. Pilots and mechanics swarmed out to meet the incoming crews like, as one observer put it, the crowds at a football rally. Soon the word passed around: all bombs dropped on or close to the target, no battle casualties, insignificant flak damage—in general, a successful mission.¹⁹

This first combat mission flown by the Fortresses of VIII Bomber Command could not have been more fortunately timed. Considerable "polite doubt" had been expressed in British circles during the summer of 1942 regarding the potentialities of the American bombers, and on 16 August, Peter Masefield, air correspondent to the *Sunday Times*, gave voice to an opinion which left little doubt and which bristled with "plain speaking."²⁰ He spoke of British satisfaction at the prospect of American aid in the bombing of Germany. But he also made it perfectly plain that he considered the B-17 and B-24 quite unsuited to the job of bombing over heavily defended enemy territory: "American heavy bombers—the latest Fortresses and Liberators—are fine flying machines, but not suited for bombing in Europe. Their bombs and bomb-loads are small, their armour and armament are not up to the standard now found necessary and their speeds are low." It was not simply that the American bombers could not perform the day bombing mission for which they were being prepared. They were likewise unsuited to night operations over Germany, and, in spite of the general desire in the British Isles to see these aircraft take part in

the night offensive, it would be unfair to the American flyers to send them into a type of action for which, according to British experience, they were not equipped. Masefield found the answer to this seemingly insoluble problem of using bombers that were suited neither to day nor to night operations by advocating that they be sent on patrol missions over the Atlantic submarine and shipping lanes.

The appearance of this article by one who presumably reflected opinion in at least some official British quarters gave rise to a certain amount of concern in AAF Headquarters. The following day General Arnold, on receiving the London dispatch which quoted the Masefield article, wired General Spaatz for a statement of the facts in the case as he saw them.²¹ General Spaatz was happily spared from having to resort to tedious and at best none too convincing apologetics, for, as a result of the mission against Rouen on 17 August, he was able for the first time to offer a combat report, and a reasonably good one at that.

The attack on Rouen had, he wired on 18 August, far exceeded in accuracy any previous high-altitude bombing in the European theater by German or Allied aircraft. Moreover, it was his understanding that the results justified "our belief" in the feasibility of daylight bombing. As for the B-17, it was suitable in speed, armament, armor, and bomb load for the task at hand. He would not, he asserted, exchange it for any British bomber in production.²²

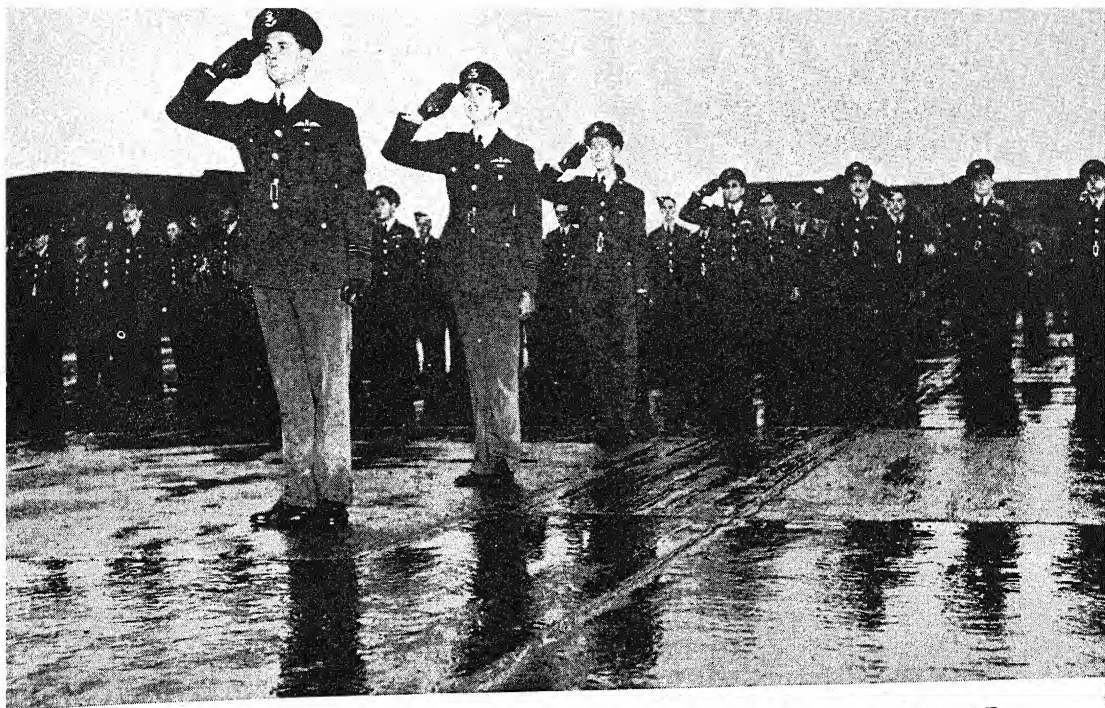
The target for this first heavy bombing raid was the Sotteville marshalling yard, one of the largest and most active in northern France. Concentrations of more than 2,000 freight cars had been photographed there. It possessed for the enemy a twofold importance: it was a focal point for traffic to and from the Channel ports and the west of France, and it comprised extensive repair installations, including a large locomotive depot and the Buddicum rolling stock repair shops. The specific aiming points were the locomotive workshops and the Buddicum shops.²³

The twelve B-17E aircraft dispatched to the target enjoyed strong support from RAF fighters. Four RAF squadrons of Spitfire IX's provided close cover for the attacking planes, flying with them to the target area. Five RAF squadrons of Spitfire V's gave withdrawal support. Visibility was excellent and all twelve planes attacked the target, dropping a total of 36,900 pounds of general-purpose bombs from a height of 23,000 feet. Three of the bombers had been loaded

with 1,100-lb. bombs intended for the locomotive workshop; the rest carried 600-lb. missiles earmarked for the Buddicum shops.²⁴

The bombing was fairly accurate for a first effort. Approximately half of the bombs fell in the general target area. One of the aiming points was hit, and several bombs burst within a radius of 1,500 feet. Those intended for the other aiming point fell mostly about 2,000 feet to the south.²⁵ Fortunately, the yard and adjacent facilities presented a large target, so that even technically inaccurate bombing might still be effective. Nevertheless, it was surprisingly good bombing. And it was effective enough, considering the small size of the attacking force. Direct hits were scored on two large transshipment sheds in the center of the marshalling yard, and about ten of the twenty-four tracks on the sidings were damaged. A quantity of rolling stock was destroyed, damaged, or derailed. As it happened, activity in the yard was not at its peak when the attack occurred, or destruction of rolling stock might have been much greater. Damage to the tracks no doubt interfered with the flow of traffic, but a sufficient number remained undamaged to deal efficiently with the relatively low-pressure traffic then moving through the yard. The bottlenecks at each end of the sidings were not damaged. The locomotive workshop received one direct hit which probably slowed up the working of locomotives and other rolling stock in and out of the building quite apart from the constructional damage resulting from blast.²⁶ Despite the inconvenience which this attack undoubtedly caused the enemy, it was clear that a much larger force would be required to do lasting damage to a target of this sort.²⁷ But for the time being, the extent of the damage inflicted was less important than the relative accuracy of the bombing.

Important also was the fact that the bombers, both of the attacking and the diversionary force, came through with no losses and with a minimum of damage. Enemy opposition had been slight. Antiaircraft fire was observed at two places, but only two planes sustained damage, and that slight. Fighter opposition was negligible. Three Me-109's attacked the formation, and several others put in a silent appearance. Of those attacking, one was claimed as damaged by fire from the B-17's. The bomber crews received no injury at all from enemy action, the only casualties having occurred when, on the way home, one plane hit a pigeon and the shattered glass from the nose of the bomber slightly injured the bombardier and navigator.²⁸



CEREMONIES ATTENDING TRANSFER OF EAGLE SQUADRONS TO USAAF,
SEPTEMBER 1942

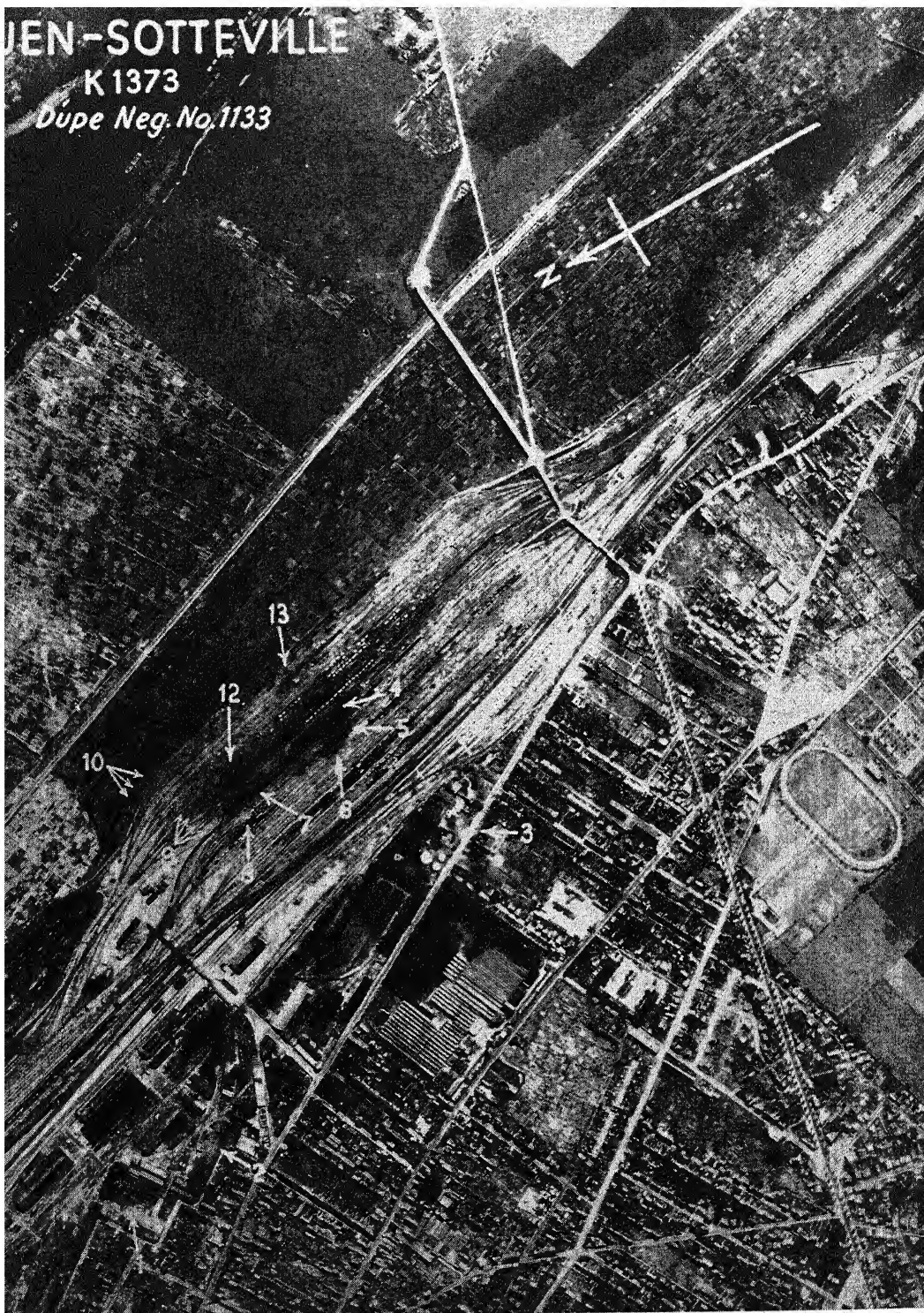
BRIEFING OF BOMBER CREWS, POLEBROOK, AUGUST 1942



ROUEN-SOTTEVILLE

K 1373

Dupe Neg. No. 1133



RECONNAISSANCE PHOTO, ROUEN-SOTTEVILLE I

General Eaker made some interesting personal observations on the problems uncovered by this initial combat test.²⁹ The crews were enthusiastic and alert, but nonchalant to the point of being blasé. Possibly it had all been too easy, but confidence was a good fault in a bomber crew. Crew drills, especially in the handling of the oxygen equipment, appeared to be indicated, and air discipline needed improvement. A better, tighter defensive formation would offer more protection against enemy fighters—not that enemy action had been a serious factor in this instance. The critical items in missions of this sort General Eaker considered to be the split-second timing for rendezvous with the fighter escort (the fighters in this case had been a few minutes late), navigation to the target (there would not always be weather so fine that the target could be seen for ten miles), training of bombardiers (the Sotteville yard was, after all, considerably larger than the proverbial pickle barrel), pilotage of such a high order that a tight yet maneuverable formation might be flown with the shortest possible level run on the target (anything less would simply court disaster from flak and fighter opposition, both of which might be expected to improve materially), and, finally, accurate gunnery.

On the matter of escort, General Eaker was unwilling to say that the B-17 could make deep penetrations into German-held territory without cover, although it was apparent from the Rouen mission that German fighters would approach the bombers gingerly.³⁰ General Spaatz shared Eaker's caution on this point. In the cable of 18 August, to which reference has been made above, Spaatz asserted that American bombers would not be sent indiscriminately into Germany and that depth of penetration would increase only as experience dictated. Meanwhile, pending determined enemy fighter attacks, which would undoubtedly soon materialize, no definite conclusions could be reached regarding the feasibility of bomber attacks unsupported by fighters.³¹

On the day after this first mission executed by his bombers, General Eaker received the following message from Air Marshal Sir Arthur T. Harris, Air Officer Commanding-in-Chief, RAF Bomber Command: "Congratulations from all ranks of Bomber Command on the highly successful completion of the first all American raid by the big fellows on German occupied territory in Europe. Yankee Doodle certainly went to town and can stick yet another well-deserved feather in his cap." ³²

Implications

When the small force of B-17's from VIII Bomber Command took to the air on 17 August 1942, they carried with them much more than a bomb load of trouble for the enemy. They carried with them a long heritage of debate and controversy. And they began an experiment in strategic bombardment which was destined to answer a number of questions vitally affecting the entire course of the war in Europe. In the summer of 1942, Allied plans, both strategic and logistical, lay in a state of extreme uncertainty. Certain major decisions had been made, but only tentatively, and the over-all plan of the war remained the subject of open discussion at the highest level.³³

Although basic Allied war plans had indicated Germany as global enemy No. 1, it was still an open question to what extent U.S. heavy bombardment should be committed to operations in the European theater at the expense of the Pacific. To those responsible for the war against Japan, especially the U.S. Navy, it seemed by no means clear that the war against Germany should receive priority in air equipment, if indeed it should receive priority at all. And in July 1942 it had been decided that American commitments to BOLERO should be readjusted in the interests of offensive operation in the Pacific.³⁴ A debate ensued as to the precise nature and extent of this planned diversion, a debate which continued through the late summer and early fall of that year, and which turned in large part on the ability of the American heavy bombers to do a job in Europe of sufficient strategic value to justify the degree of priority required for a major air offensive in that theater. In fact, it was not until the Casablanca conference in January 1943 that the full-scale bomber offensive envisaged by American and British air strategists was given an unassailable place in Allied strategy. Meanwhile, it was up to the bomber units of the Eighth Air Force to demonstrate that they could bomb the enemy in broad daylight heavily enough and accurately enough and with a sufficiently low rate of loss to make the American part of the projected offensive—the bombing of selected installations by day—a practicable reality.

Then there was the question of priority in production, which in August 1942 was becoming the object of a prolonged and crucial controversy among American planners. A strategic bomber offensive

from the United Kingdom, aimed at Germany's war potential, had been envisaged in the early war plans as a prerequisite to the invasion of Europe and the ultimate defeat of Germany. The USAAF had contended consistently that given adequate forces they could, in co-operation with the RAF, carry out such an offensive and do it, moreover, so effectively that an assault on *Festung Europa* could be accomplished with the least possible loss in men and ground materiel.³⁵ But it was clear that to do so the AAF would need aircraft in unprecedented numbers. This meant, in effect, a top—if not an over-riding—priority for the air program in American war production.³⁶ But the higher authorities, faced with the problem of adapting limitless demands to resources that were strictly limited, had of necessity to allot priorities carefully and in accordance with very long-term strategic plans. If the air program was to be implemented in full, clearly the programs of the Ground Forces and the Navy could not be. And in the summer of 1942 it was anything but a foregone conclusion that the weapons of air power should be given precedence over those items—tanks and battleships, for example—which carried with them the reassuring weight of military tradition. Here again it was up to the exponents of air power to demonstrate the feasibility of strategic bombardment.

Thus, both strategic and logistical planning, insofar as they involved air power, depended to a great, possibly even to a decisive, degree on the ability of the Allied air forces to prove that they could bomb Germany successfully. With reference to the USAAF, in particular, since it had become committed to a policy of bombing precision targets in daylight from high altitudes, long-range planning depended on the ability of the Eighth Air Force to show that it could do the job and do it economically enough to make it a practicable operation of war. So far, the confidence of American and British airmen in the soundness of their strategic and tactical doctrines arose out of deep faith in the potentialities of air power rather than from an adequate store of experience. The German effort to cripple Britain in 1940-41 had demonstrated what ought not to be done rather than what might reasonably be expected from strategic bombardment. On the other hand, the subsequent bombing of Germany by the RAF had as yet been conducted on a scale too limited and in a manner too specialized to answer conclusively the opponents of air power. As for

THE ARMY AIR FORCES IN WORLD WAR II

the USAAF, its doctrine of daylight bombardment remained entirely an article of faith as far as any experience in combat under European conditions was concerned.

So it was that on 17 August 1942 all eyes were fixed on a bombardment mission which in the later context of strategic bombing would have appeared insignificant indeed. The experiment begun on that day culminated during the following year in the Combined Bomber Offensive, a campaign which could only have been attempted after all major doubts regarding the use of heavy bombardment forces had for practical purposes been removed.

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NOTES TO CHAPTER 1

1. Howard E. Coffin, quoted in *New York Times*, 14 June 1917.
2. A.W. Sweetser, *The American Air Service* (New York, 1919), pp. 66-68.
3. *Ibid.*, pp. 230-31.
4. *Ibid.*, chap. 5.
5. *New York Times*, 10 June 1917.
6. Dr. C.D. Walcott of NACA, quoted in Sweetser, *op. cit.*, p. 45.
7. E.S. Gorrell, *The Measure of America's World War Aeronautical Effort* (Northfield, Vt., 1940), p. 2.
8. Sweetser, *op. cit.*, p. 16.
9. G.W. Mixer and H.H. Emmons, *U.S. Army Aircraft Production Facts* (Washington, 1919), p. 5.
10. J.J. Pershing, *My Experiences in the World War* (New York, 1931), I, 27.
11. Sweetser, *op. cit.*, p. 46.
12. *Ibid.*, p. 54; Mixer and Emmons, *op. cit.*, p. 5.
13. J.M. Spaight, *The Beginnings of Organized Air Power: A Historical Study* (London, 1927), p. 239.
14. Sweetser, *op. cit.*, p. 93, n. 1, quoting the legislation.
15. Spaight, *op. cit.*, pp. 238-45, based largely on Sweetser.
16. Sweetser, *op. cit.*, pp. 190 ff.
17. *Ibid.*, chaps. vi and vii.
18. *Ibid.*, pp. 210-17.
19. *Ibid.*, pp. 218-19, 238; Spaight, *op. cit.*, pp. 246-51.
20. Sweetser, *op. cit.*, pp. 220 ff.
21. *Ibid.*, pp. 240, 247-48. Spaight (*op. cit.*, pp. 279-88) summarizes statistics from various sources.
22. Sweetser, *op. cit.*, pp. 232-33.
23. Pershing, *op. cit.*, I, 161-62.
24. M.M. Patrick, *The United States in the Air* (New York, 1928), p. 15.
25. H.A. Toulmin, Jr., *Air Service, A.E.F., 1918* (New York, 1927), pp. 74-78.
26. Patrick, *op. cit.*, p. 16.
27. Gorrell, *op. cit.*, p. 29 (table); Pershing, *op. cit.*, II, 61.
28. Patrick, *op. cit.*, pp. 1-16; Toulmin, *op. cit.*, chap. vi.
29. Patrick, *op. cit.*, p. 17. Here he gives the previous goal as 354 squadrons.
30. Gorrell, *op. cit.*, p. 29.
31. *Final Report of Chief of Air Service, A.E.F.* (Washington, 1921).
32. Details in this section are taken from the best of the Mitchell biographies: Isaac Don Levine, *Mitchell, Pioneer of Air Power* (New York, 1943).
33. For quotations see *ibid.*, 92-94.
34. *Ibid.*, pp. 95-97.
35. *Ibid.*, pp. 97-100.
36. *Ibid.*, p. 108.
37. *Final Report . . . , A.E.F., passim.* Another summary of the participation of American air units in the war will be found in [Clayton L. Bissell] *Brief History of the Air Corps and Its Late Development* (Air Corps Tactical School, Langley Field, Va., [1927]), pp. 33-65.
38. William Mitchell, "The Air Service at St. Mihiel," *World's Work*, XXXVIII (Aug., 1919), 360-70; *Final Report . . . , A.E.F.*
39. Quotations and general concept of the battle taken from William Mitchell, "The Air Service at the Argonne-Meuse," *World's Work*, XXXVIII (Sept. 1919), 552-60; *Final Report . . . , A.E.F.*
40. Quoted in Special AAF Historical Study, Review of Aerial Warfare for the Scientific Advisory Board (Jan. 1945), p. 3.

NOTES TO PAGES 15-26

41. *Final Report . . . , A.E.F.*
42. H.A. Jones, *The War in the Air*, VI (Oxford, 1937), 1-27, 101-17, and the pertinent documents in the appendices, especially on p. 41.
43. Toulmin, *op. cit.*, chap. xv.

NOTES TO CHAPTER 2

1. *Report of the Secretary of War, 1919* (Washington, 1920), pp. 58-75.
2. *Aircraft: Hearings before the President's Aircraft Board* (Washington, 1925) (hereinafter cited as Morrow Board, *Hearings*), p. 398.
3. *Inquiry into Operations of the U.S. Air Services: Hearing before Select Committee of Inquiry into Operations of the U.S. Air Services, House of Representatives* (Washington, 1925) (hereinafter cited as Lampert Committee, *Hearing*), p. 2262.
4. *Department of Defense and Unification of Air Service: Hearings before the Committee on Military Affairs, House of Representatives* (Washington, 1926) (hereinafter cited as Committee on Military Affairs, 1926, *Hearings*), p. 476.
5. See, for example, the *Final Report of War Department Special Committee on Army Air Corps* (Washington, 1934) (hereinafter cited as Baker Board, *Final Report*), p. 26.
6. *Army Reorganization: Hearings before the Committee on Military Affairs, House of Representatives* (Washington, 1919) (hereinafter cited as Committee on Military Affairs, 1919, *Hearings*), p. 932.
7. Committee on Military Affairs, 1926, *Hearings*, p. 383.
8. Lampert Committee, *Hearing*, p. 2240; cf. pp. 2106, 2250, 2252. A list of the Air Service officers testifying before the several committees would include many of the most ardent supporters of unification. (See also William Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power—Economic and Military* [New York, 1925], p. 30.)

9. M.M. Patrick, *The United States in the Air*, p. 177.
10. Baker Board, *Final Report*, page 4, omits the American Aviation Mission, headed by Benedict Crowell, Assistant Secretary of War, which reported on 19 July 1919.
11. Quoted in AAF Historical Study No. 25, Organization of Military Aeronautics, 1907-1935 (hereinafter cited as AAFHS-25), p. 71.
12. Dwight W. Morrow, in Committee on Military Affairs, 1926, *Hearings*, p. 830.
13. Public No. 143 (63d Cong.).
14. AAFHS-25, pp. 36-38.
15. *Ibid.*, p. 41.
16. Reports published in Committee on Military Affairs, 1926, *Hearings*: Dickman Board, pp. 952-57; Menoher Board, pp. 908-17.
17. AAFHS-25, pp. 38-40.
18. Public No. 242 (66th Cong.), in 41 *Stat.* 759-88. In respect to the disposition of the Crowell report, see the testimony of Howard E. Coffin, a member, in Lampert Committee, *Hearing*, p. 1215.
19. *Report of the Secretary of War, 1919*, pp. 68-75.
20. Quoted in Isaac Don Levine, *Mitchell, Pioneer of Air Power*, p. 317.
21. Morrow Board, *Hearings*, p. 497.
22. Levine, *Mitchell*, pages 401-5, gives a bibliography of his writings.
23. See, for instance, William Mitchell, *Our Air Force: The Keystone of National Defense* (New York, 1921), chap. xiv; "Aviation over the Water," *American Review of Reviews*, LXII (Oct. 1920), 391-98; "Air Power vs. Sea Power," *ibid.*, LXIII (Mar. 1921), 273-78; "Has the Airplane Made the Battleship Obsolete?" *World's Work*, XL (Apr. 1921); "Aircraft Dominate Seacraft," *Saturday Evening Post*, 24 Jan. 1925, etc.
24. Mitchell, *Winged Defense*, pp. 41-42; Levine, *Mitchell*, chap. viii.
25. Levine, *Mitchell*, chap. ix and pp. 269-70.

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26. *Ibid.*, pp. 271-72 and 287-90; Mitchell, *Winged Defense*, pp. 73-75.
27. AAFHS-25, pp. 56-58.
28. *Report of the Secretary of War, 1921* (Washington, 1921), pp. 183 ff.; *Report of the Secretary of War, 1922* (Washington, 1922), p. 163.
29. *Report of the S/W, 1922*, p. 261.
30. *Ibid.*
31. AAFHS-25, pp. 60-61. See also text in *New York Times*, 19 Oct. 1923.
32. AAFHS-25, p. 62.
33. Levine, *Mitchell*, pp. 293-99.
34. AAFHS-25, pp. 63-64.
35. *Ibid.*, pp. 65-67; Mitchell, *Winged Defense*, p. xix.
36. AAFHS-25, pp. 62-63.
37. To the Lampert Committee, Patrick advocated a separate air force, not for the present but to be formed after five or ten years. (Lampert Committee, *Hearing*, p. 533.) By 1928 he was favoring the Department of Defense. (Patrick, *United States in the Air*, pp. 190-91.)
38. Charges of intimidation were denied by interested authorities but seem to have been well founded. (See Lampert Committee, *Hearing*, *passim* and especially pp. 1667, 1829, 2377.)
39. Levine, *Mitchell*, pp. 300-317.
40. *Ibid.*, pp. 318-20.
41. *Ibid.*, chaps. 12-13.
42. *Ibid.*, p. 331, quoting *New York Evening Post*.
43. AAFHS-25, pp. 68-69.
44. Morrow Board, *Hearings*, p. 2.
45. S. Doc. 18 (69th Cong., 1st sess.). See also text in *New York Times*, 3 Dec. 1925.
46. H. Report 1653 (68th Cong., 2d sess.); contents analyzed in *New York Times*, 14 Dec. 1925.
47. AAFHS-25, pp. 73-77.
48. Public No. 446 (69th Cong., in 44 Stat. 780 ff.).
49. AAFHS-25, p. 83. The Baker Board's *Final Report*, page 7, laid the blame on Congress.
50. AAFHS-25, p. 85.
51. *Ibid.*, p. 88.
52. War Department Press Release, 9 Jan. 1931; Annual Report of the Chief of Staff, in *Report of the Secretary of War, 1931* (Washington, 1931), p. 38.
53. AAFHS-25, pp. 91-92.
54. *Ibid.*, p. 93.
55. Baker Board, *Final Report*, 18 July 1934.
56. *Ibid.*, pp. 18-19.
57. *Ibid.*, p. 75.
58. AAFHS-25, pp. 96-98.
59. *Ibid.*, pp. 98-99. The reorganization was authorized by AGO letter of 31 December 1934.
60. AAF Historical Study No. 10, Organization of the Army Air Arm, 1935-43, pp. 4-6.
61. *Ibid.*, pp. 6-8.
62. *Ibid.*, pp. 8-15.
63. Morrow Board, *Hearings*, p. 445.
64. Maj. Warren R. Carter, AC, Employment of Army Air Forces, 12 Apr. 1938.
65. Howard E. Coffin, quoted in A.W. Sweetser, *The American Air Service*, p. 79.
66. Mitchell, "Our Army's Air Service," *American Review of Reviews*, LXII (Sept. 1920), pp. 281-90.
67. *Ibid.*
68. Mitchell, *Our Air Force: The Keystone of National Defense*, p. 12.
69. Mitchell, "The Air Service at St. Mihiel," *World's Work*, XXXVIII (Aug. 1919), p. 365.
70. Mitchell, "Our Army's Air Service," *loc. cit.*
71. Mitchell, "The Air Service at St. Mihiel," *loc. cit.*
72. H. A. Jones, *The War in the Air*, VI, 136.
73. *Ibid.*
74. Levine, *Mitchell*, pp. 148-50.
75. J.J. Pershing, *My Experiences in the World War*, II, 337.
76. Mitchell, *Our Air Force*, p. 55.
77. *Ibid.*, Introduction, p. xxii.

NOTES TO PAGES 38-49

78. Mitchell, "Air Power vs. Sea Power," *American Review of Reviews*, LXIII (Mar. 1921), p. 273.

79. Mitchell, *Our Air Force*, p. 15.

80. *Ibid.*, pp. 174 ff.; and developed further in his *Winged Defense*, pp. 10-11.

81. Mitchell, *Our Air Force*, p. 161.

82. Mitchell, "Our Army's Air Service," p. 288.

83. *Winged Defense*, Introduction, pp. xv-xvi.

84. *Ibid.*, p. vii.

85. Morrow Board, *Hearings*, p. 499; Mitchell, "Airplanes in National Defense," *Annals of the American Academy of Political Science*, Vol. 131 (May 1927), 38-42.

86. *Ibid.*

87. *Ibid.*

88. Morrow Board, *Hearings*, p. 499.

89. "Airplanes in National Defense," *loc. cit.*

90. *Winged Defense*, p. 12.

91. *Ibid.*, p. 216.

92. *Ibid.*

93. *Ibid.*, p. 10.

94. *Ibid.*, p. 12.

95. *Ibid.*, p. 214.

96. Mitchell, *Skyways* (Philadelphia, 1930), pp. 271, 278.

97. *Winged Defense*, p. 16.

98. *Skyways*, p. 253.

99. *Ibid.*, p. 255.

100. *Ibid.*, p. 269.

101. *Ibid.*, p. 256.

102. *Ibid.*, p. 269.

103. For an analysis and evaluation, see Edward Warner, "Douhet, Mitchell, Seversky: Theories of Air Warfare," in E.M. Earle, *Makers of Modern Strategy* (Princeton, 1944), pp. 485-583.

104. Quoted by Brig. Gen. Hugh A. Drum in Morrow Board, *Hearings*, p. 21.

105. *Report of the Secretary of War*, 1919, p. 70.

106. See, for example, his letter to Menoher, Director of Air Service, 12 Jan. 1920, and his Final Report of 12

Sept. 1924, both quoted in Morrow Board, *Hearings*, pp. 23, 25.

107. Field Service Regulations, U. S. Army (Washington, 1924), p. 77.

108. *Ibid.*

109. *Ibid.*, p. 11.

110. *Ibid.*

111. *Ibid.*, pp. 22-23.

112. *Ibid.*, p. 22.

113. *Ibid.*, p. 23.

114. See accompanying letter, *ibid.*, p. iii.

115. TR 440-15, Sec. I, 4.

116. *Ibid.*, I, 4; and III, 14.

117. Air Service Tactical School, Langley Field, Va., Bombardment (Washington, 1926), p. 54.

118. *Ibid.*, pp. 64, 72.

119. Ltr., Lt. Col. C.C. Culver, Comdt. ACTS to C/AC, 30 Apr. 1928.

120. 1st ind. (*ibid.*), OCAC to Comdt. ACTS, 1 Sept. 1928.

121. The Air Force, pp. 50, 100, quoted in Richard Stockton, *Inevitable War* (New York, 1932), pp. 531-32.

122. Drum Board Report, quoted in Baker Board, *Final Report*, pp. 11-15.

123. *Ibid.*, p. 12.

124. J.B. No. 349 (Serial 539), 26 Sept. 1934.

125. Joint Action of the Army and Navy, 11 Sept. 1935.

126. Ltr., Douglas MacArthur, C/S to CG's of Armies, GHQAF, *et al.*, 17 Oct. 1934.

127. Quoted in memo for C/AC from Brig. Gen. C.E. Kilbourne, AC/S, WPD, 21 Dec. 1934.

128. Submitted with memo cited above.

129. Memo for Exec. OCAC from Maj. Carl Spaatz, Chief, Training and Operations Div., 5 Jan. 1935; ACTS Study of Proposed Air Corps Doctrine Submitted by WPD, WDGS, 31 Jan. 1935.

130. TR 440-15, Sec. III, 6.

131. Submitted with ACTS study, as cited in n. 129.

132. *Ibid.*

133. Air Corps Board Study No. 31, 29 Oct. 1936, approved by Maj. Gen. Oscar Westover, 25 Nov. 1936.
134. Air Corps Board Study No. 44, 17 Oct. 1938.
135. ACTS study, as cited in n. 129.
136. Interview with Brig. Gen. H.S. Hansell by B.C. Hopper, 5 Oct. 1943.
137. *Ibid.*
138. Warner, *op. cit.*, p. 489.
139. Maj. W.H. Frank, Doctrine of the Employment of an Aerial Force, quoted by Brig. Gen. H.S. Hansell from ACTS lectures, in Development of the US Air Force Philosophy of Air Warfare Prior to World War II, in special file of Brig. Gen. Frederic H. Smith, Jr. [Notes 140 through 147 are drawn from the same compilation; citation is made to the lecturer, title of lecture, and date of school year.]
140. Frank, *loc. cit.*; cf. Capt. H.L. George, Air Force Objectives, 1934-35.
141. Frank, *loc. cit.*
142. *Ibid.*; cf. Lt. L.S. Kuter, The Influence of Air Power on Naval Warfare, 1936.
143. George, *loc. cit.*
144. Maj. Donald Wilson (title unknown), 1933-34; George, General Air Force Principles, 1933-34.
145. George, General Air Force Principles, 1933-34; cf. Lt. H.S. Hansell, The Functions of Air Power in Our National Strategy, 1935-36.
146. Hansell, Functions of Air Power in Our National Strategy; cf. Maj. M.S. Fairchild, Immediate Support of Ground Operations, 1937-38.
147. George, Air Force Objectives.
148. Interview with Brig. Gen. H.S. Hansell by B.C. Hopper, 5 Oct. 1943; Jurisdictional Relationships between G-2 and A-2, Historical Summary and Basic Papers, in AFSHO files.
149. TR 440-15, Sec. I, par. 7.
150. See n. 64, this chapter.
151. J.B. No. 349, 29 June 1938.
152. Special AAF Historical Study, Comparative History of Research and Development Policies Affecting Air Materiel, 1915-1944 (June 1945), p. 46; Office of Statistical Control, Army Air Forces Statistical Digest, World War II (Dec. 1945), p. 297.
153. See sources in n. 152.
154. Comparative History of Research and Development Policies, pp. 25-30 and sources cited there.
155. History, Materiel Command, 1926-41.
156. Comparative History of Research and Development Policies, pp. 41-42.
157. *Ibid.*, pp. 56-61.
158. *Ibid.*, pp. 41, 103-4; AAF Historical Study No. 66, Development of Radio and Radar Equipment for Air Operations, 1939-44.
159. Comparative History of Research and Development Policies, pp. 67-68, 70-72.
160. Memo for Engineering Div. by Acting Chief, Supply Gp., 3 Oct. 1921, quoted in draft ATSC historical study, Development of Bombing Equipment (March 1945), chap. iii, p. 5. See also Comparative History of Research and Development Policies, p. 31.
161. AAF Historical Study No. 22, Legislation Relating to the AAF Materiel Program, 1939-44, App. 1.
162. AAF Statistical Digest (Dec. 1945), p. 297; Comparative History of Research and Development Policies, p. 46.
163. The Bryden Board Report. See draft AAF Historical Study, Development of the Heavy Bomber, 1918-44, pp. 35-36.
164. For a very useful listing, with specifications, of the major types of planes used by the Air Service and Air Corps, see *The Official Pictorial History of the AAF* (New York, 1947), pp. 170-213.
165. *Ibid.*, p. 196.
166. Development of the Heavy Bomber, p. 107.
167. Memo for C/AS from C/ED, 10 Jan. 1926, cited in Development of the Heavy Bomber, p. 104.

NOTES TO PAGES 58-68

168. *Pictorial History of the AAF*, pp. 196, 198.

169. Development of the Heavy Bomber, pp. 8-11, 109.

170. *Pictorial History of the AAF*, p. 197.

171. Memo for C/AC from Knerr, 23 May 1928; memo for CO 2d Wing from C/AC, 28 May 1928, and indorsements; memo for C/MD from C/AC, 17 June 1928—all cited in Development of the Heavy Bomber, pp. 9-10.

172. Development of the Heavy Bomber, p. 10, with citations to 1st ind. (memo for C/MD from C/AC, 27 June 1928), C/MD to C/AC, 21 July 1928; memo for C/MD from CO 2d Bomb. Gp., 15 Feb. 1929.

173. 2d ind. (memo for C/MD from C/AC, 2 Feb. 1929), C/MD to C/AC, 15 Jan. 1930, cited in Development of Heavy Bomber, p. 11.

174. Development of Heavy Bomber, p. 11, with citation to memo for C/AC from Acting Comdt. ACTS, 19 Mar. 1930, together with 2d ind., AC/MD to C/AC, 12 Apr. 1930.

175. Attachment to memo for AS/W, Procurement Program for the Air Corps from 1940 to 1945, 24 Nov. 1937.

176. See, for example, memo for S/W from Andrews, Air Corps Procurement Program, 24 Jan. 1938.

177. See in this connection a historical account by Maj. Gen. Mason M. Patrick in memo for AS/W, Conflict of Army and Navy Programs, 9 Sept. 1927.

178. The governing statements of policy are found in the Army Appropriation Act for 1921 (41 Stat. 954); Joint Army and Navy Action in Coast Defense [1920]; Joint Action of the Army and the Navy, 23 Apr. 1927.

179. War Department Press Release, 9 Jan. 1931.

180. Annual Report of the Chief of Staff, in *Report of the Secretary of War to the President, 1931*, p. 38.

181. Extract from hearing on H.R. 9920, 25 May 1932, in AFSHO collection of miscellaneous data on Coast Defense, III.

182. AG 660.2 in OCAC 370.3, Protection of Seacoast (1921-34). Note supplied through the courtesy of Dr. William A. Goss.

183. Memo for AC/S, WPD from C/AC, 14 Nov. 1932; The Present Status of Military Aviation and Its Trend of Development, a lecture for delivery at Army War College, 12 Sept. 1933, by Maj. Gen. B.D. Foullois.

184. Memo for C/S from WPD, 28 Nov. 1932.

185. Report of the GHQ Air Force (Provisional), 1933 [no exact date given]. Quotations from pp. 5, 6, 12-13.

186. *Ibid.*, p. 12.

187. Memo for DC/S from C/AC, 12 Dec. 1933.

188. AG 112.05 (11-15-32), Sec. 2; memo for C/S from DC/S, 12 May 1934.

189. See under that date, OCAC 452.1, Heavy Bomber.

190. Memo for C/AC from MD, 4 Feb. 1935; Contract W535 ac-7618, 29 June 1935.

191. Memo for AG from C/AC, 8 Nov. 1935.

192. Contract W535 ac-8306, 17 Jan. 1936; Materiel Division chart, Status of Deliveries of Airplanes on 1936 Procurement Program [1938]; War Department Special Quarterly Report of Airplanes [by Materiel Division, Wright Field], as of 31 Mar., 30 June, 30 Sept. 1937; Development of the Heavy Bomber, pp. 18, 117-18, with citations there to memo for AG from C/AC, 1 Oct. 1935; 1st ind. (memo for AG from AC/AC, 8 Nov. 1935), AG to C/AC, 21 Nov. 1935; and 000.93 (Special), Accident-Wright, 30 Oct. 1935.

193. According to information subsequently provided for General Arnold, Admiral Pratt's successor, Adm. William H. Standley, promptly repudiated the agreement. (Memo for Henry H. Arnold from Maj. R.G. Hoyt, 11 Mar. 1936.)

194. J.B. No. 349 (Serial No. 539); Joint Action of the Army and Navy, 1935.

195. 3d ind. (ltr., Lt. Col. Olds to CG 2d Wing, GHQAF), 26 July 1937.

NOTES TO PAGES 69-92

196. Attachment to memo for AS/W, Procurement Program for the Air Corps from 1940 to 1945, 24 Nov. 1937.

197. See papers on 100-mile limit in special file of Brig. Gen. Frederic H. Smith, Jr., and below, chap. 15.

198. Ltr., AG to C/AC, 29 Sept. 1936.

199. AAF Biennial Report, 1939-41; *Pictorial History of the AAF*, p. 198.

200. Memo for Budget Office by Maj. B.E. Myers, 12 Oct. 1939; cf. Contract W535 ac-10155, 17 Aug. 1937, and Status of Deliveries of Airplanes on 1936 Procurement Program [1938]; War Department Special Quarterly Report of Airplanes, 31 Dec. 1937-30 Sept. 1939.

201. Memo for AG from CG GHQAF, 1 June 1937, cited in Development of the Heavy Bomber, p. 23.

202. Memo for S/W, Air Corps Procurement Program, 24 Jan. 1938. The problem under discussion was the Air Corps procurement program, 1940-45.

NOTES TO CHAPTER 3

1. Editorial in *U.S. Air Services*, Jan. 1942, pp. 1-2.

2. Air Ministry, Organization of the Japanese Army and Navy Air Forces, Feb. 1945, pp. 1-2; USSBS draft study, Japanese Air Power, 29 Mar. 1946.

3. USSBS, Japanese Air Power.

4. Intel. Div., WDGS, Military Summary of Far East, Vol. II-8 (June 1946).

5. USSBS, Japanese Air Power; USSBS (Pacific), Interrogation 428, 23 Nov. 1945; The Japanese Air Force, 20 Sept. 1941, in AFSHO files.

6. USSBS, Japanese Air Power.

7. *Ibid.*; MIS, Japanese Ground and Air Forces, Info. Bulletin 14, 1 May 1942; Organization of the Japanese Army and Navy Air Forces, pp. 2-4.

8. USSBS, Japanese Air Power.

9. Notes on the Italian Air Force, in special file of Brig. Gen. Frederic H. Smith, Jr.

10. MID, Comparative Air Power of Leading Nations, 14 Jan. 1939.

11. Col. Guida R. Perera, *A Legislative History of Aviation in the United States and Abroad*, Oct. 1940.

12. Louis A. Sigaud, *Doubet and Aerial Warfare* (New York, 1941), pp. 1-25.

13. Notes on the Italian Air Force, as cited in n. 9; military attaché report, Italy, No. 17115, 30 June 1939.

14. C.G. Grey, *Bombers* (London, 1941), pp. 77-78.

15. *Ibid.*; military attaché report, Italy, No. 17115; OCAC Intel. Sec., Notes on Foreign Aviation for General Arnold, 4 Mar. 1938.

16. Notes on Foreign Aviation for General Arnold.

17. Notes on the Italian Air Force.

18. Lt. Cols. Leslie H. Arps and Frank V. Quigley, The Origin, Development, and Organization of the Luftwaffe, 1 Oct. 1945, in special file cited in n. 9.

19. *Ibid.*; Air Ministry, Notes on the German Air Force, Apr. 1943, U.S. Navy reprint.

20. Notes on the German Air Force.

21. *Ibid.*; USSBS, *Over-all Report (European War)*, 30 Sept. 1945.

22. The best published account is Asher Lee, *The German Air Force* (New York and London, 1946).

23. Arps and Quigley report; Notes on the German Air Force.

24. Arps and Quigley report; Perera, *op. cit.*

25. USSBS, *Over-all Report (European War)*; Lee, *op. cit.*

26. Lee, *op. cit.*

27. USSBS, *Over-all Report (European War)*; The German Campaign in Poland, September 1 to October 5, 1939, WD Digests and Lessons of Recent Military Operations, 31 Mar. 1942.

28. Arps and Quigley report; Notes on the German Air Force; USSBS, *Over-all Report (European War)*.

29. Notes on the French Air Force, n.d., in special file cited in n. 9.

30. Col. John M. Harlan and Lt. Col. Leslie H. Arps, The Creation of the Air Ministry and the Royal Air Force as a

NOTES TO PAGES 93-105

Separate Branch of the British Military Services, 1 May 1944, in special file cited in n. 9; Hilary St. George Saunders, *Per Ardua: The Rise of British Air Power, 1911-1939* (London, 1945), pp. 210, 259, 317-21.

31. Saunders, *Per Ardua*.

32. Special AAF Historical Study, Review of Aerial Warfare for the Scientific Advisory Board (Jan. 1945).

33. Arps and Quigley report.

34. For the following account see *The Battle of Britain*, British Air Ministry account (New York, 1941); USSBS, *Over-all Report (European War)*; Arps and Quigley report.

35. USSBS, *Over-all Report (European War)*; and *The Effects of Strategic Bombing on German War Economy* (Oct. 1945).

36. "Since the Battle of Britain," *RAF Journal*, No. 11 (Sept. 1943), p. 10.

37. Notes on the German Air Force.

38. Notes on the Russian Air Force, in special file cited in n. 9.

39. Arps and Quigley report; Notes on the German Air Force.

40. Air Ministry, *Royal Air Force War Manual*, Pt. I, Operations, Air Publication 1300, Feb. 1940.

41. *Ibid.*; Production of Heavy Bombers in the United States of America (British source, n.d.), in AFSHO files.

42. AL (41) 8th Mtg., War Cabinet, American Liaison, 21 Nov. 1941; J.B. No. 325 (Serial No. 729), 25 Sept. 1941, Joint Board to SPOBS, Comments on General Strategy, Review by the British Chiefs of Staff.

(Chicago, 1944). This book shows the close relations between Roosevelt and the Committee To Defend America by Aiding the Allies.

4. On 5 September. *Events Leading up to World War II*, H. Doc. 541 (78th Cong., 2d sess.), p. 215 (hereinafter cited as *Events*).

5. Lend-Lease Directive No. 1.

6. *Peace and War*, p. 452.

7. Statement of Maj. Gen. H.H. Arnold, Chief of the Air Corps, Relative to Air Corps Estimates for Fiscal Year 1941, dated 3/1/40.

8. AAF Historical Study No. 16, Legislation Relating to the AAF Personnel Program, 1939 to May 1944, pp. 1-12; AAF Historical Study No. 22, Legislation Relating to the AAF Materiel Program, pp. 19-20; *New York Times*, 5 Apr. 1939.

9. *Report of Commanding General AAF to Secretary of War*, 3 Jan. 1944; *New York Times*, 5 Apr. 1939.

10. Arnold statement as cited in n. 7; address of Maj. Gen. H.H. Arnold before graduating class, Air Corps Tactical School, 5 Dec. 1939. The appropriations necessary for the undertaking of this program, also known at times as the 25 Group Program, were provided by Public No. 18 (76th Cong., 1st sess.), 53 *Stat.* 555, 3 Apr. 1939, and Public No. 164, 53 *Stat.* 994, 1 July 1939.

11. The 41 Group Program became actually an integral part of the 54 Group Program. Public No. 611 (76th Cong., 3d sess.), 54 *Stat.* 350, 13 June 1940, and Public No. 667, 54 *Stat.* 599, 26 June 1940, appropriated funds covering the personnel and aircraft requirements of no more than forty-one groups. That figure remained the limit for which funds had been appropriated until Public No. 800 (76th Cong., 3d sess.), 54 *Stat.* 965, 8 Oct. 1940, provided funds covering the difference between a 41-group and 54-group objective.

12. AG 580 (6-28-40) M-F to C/AC, Army's First Aviation Objective, 29 June 1940; memo for C/S from Brig. Gen. B.K. Yount, AC/AC, 6 Aug. 1940.

13. AG 580 (3-7-41) M-C-M to CG GHQAF and C/AC, Army's Second

NOTES TO CHAPTER 4

1. Message to the Congress, in State Dept. collection of documents, *Peace and War: U.S. Foreign Policy, 1931-1941* (Washington, 1943), pp. 403-5.

2. Message to the Congress, 12 Jan. 1939, *ibid.*, pp. 451-54.

3. On this general topic see Walter Johnson, *The Battle against Isolation*

Aviation Objective, 14 Mar. 1941. Public announcement of the 84 Group Program came on 23 October 1941. For a more detailed discussion of these successive programs see draft AAF Historical Study, Development of AAF Base Facilities, 1939-45.

14. AAF Directory of Groups.

15. Address by Arnold at the Industrial War College, 13 Feb. 1941.

16. *Ibid.*

17. Message to the Congress, in *Peace and War*, p. 530; Materiel Div., Summary of Current Air Corps Programs, 19 July 1940.

18. Arnold address as cited in n. 15.

19. Materiel Div., Consolidated Statistical Report, Sec. I, Pt. 7, 30 Sept. 1941.

20. Special AAF Historical Study, Review of Aerial Warfare for the Scientific Advisory Board (Jan. 1945).

21. AAFHS-22, p. 46.

22. Review of Aerial Warfare; *Report of CG AAF to Sec. of War*, 3 Jan. 1944.

23. History, SPOBS Prior to Activation of ETO.

24. Data taken from Tactical Planning: Characteristics and Performance Chart. There were other tactical planes in production. These were the ones upon which the AAF depended most.

25. For a complete list see Aircraft in Use in the Royal Air Force by Types, Oct. 1941, incl. to ltr., G/C D.F. Anderson to Maj. J.T. Clement, 10 Oct. 1941.

26. *Peace and War*, p. 81.

27. AAF Historical Study No. 10, Organization of the Army Air Arm, 1935-43, p. 81.

28. AAF Historical Study No. 15, Procurement of Aircrew Trainees, pp. 8-9; AG 580 (3-7-41) M-C-M to CG GHQAF and C/AC, Army's Second Aviation Objective, 14 Mar. 1941; PRO releases, 14 June 1940 and 23 Oct. 1941.

29. History, Central Flying Training Command, 1 Jan. 1939-7 Dec. 1941, pp. 27-31; History, West Coast Air Corps Training Center, 8 July 1940-7 Dec. 1941, pp. 10-54.

30. History, West Coast Air Corps Training Center, 8 July 1940-7 Dec. 1941, pp. 10-54.

31. AAF Historical Study No. 7, Legislation Relating to the AAF Training Program, 1939 to 1943, pp. 39 ff.

32. Arnold statement as cited in n. 7.

33. AAF Historical Study No. 26, Individual Training in Aircraft Maintenance in the AAF, pp. 2-11.

34. History, West Coast Air Corps Training Center, 8 July 1940-7 Dec. 1941, pp. 301-4.

35. History, AAF Technical Training Command.

36. History, West Coast Air Corps Training Center, 8 July 1940-7 Dec. 1941, pp. 298-99, 301-4.

37. *Ibid.*, pp. 197-204.

38. AAFHS-10, pp. 1-15.

39. *Report of CG AAF to Sec. of War*, 3 Jan. 1944.

40. AR 95-5, 20 June 1941.

41. AAFHS-10, pp. 15-31.

42. *Ibid.*

43. Quoted in History, Central Flying Training Command, 1 Jan. 1939-7 Dec. 1941, p. 1.

44. *Biennial Report*, C/S to Sec. of War, 1 July 1941.

45. *Peace and War*, p. 404.

46. *Ibid.*, p. 448.

47. *Ibid.*, p. 405.

48. See "National Defense Strategy, If Britain Should Lose," *Time*, 22 July 1940, pp. 19-22; Johnson, *op. cit.*, pp. 89-92.

49. *Peace and War*, p. 452.

50. *Ibid.*, pp. 527-32.

51. Joint Action of the Army and Navy, 11 Sept. 1935.

52. Report of the Air Corps Board, Study No. 44, 17 Oct. 1938.

53. Memo for AC/S, WPD, Air Force Study, 14 Mar. 1939, in AAG 321, Misc. Staff, Corps, or Dept.

54. Requirements Army Aviation for Hemisphere Defense, 3 June 1940, in AAG 381, War Plans.

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55. Report on Air Corps Mission under the Monroe Doctrine, by the Air Corps Board, Study No. 44, 17 Oct. 1938.

56. Final Report of Air Corps Board on Division of Five Year Experimental Program, 23 June 1939.

57. Requirements, as in n. 54.

58. Memo for Col. Loughry from Lt. Col. Orlando Ward, 25 July 1939, and reply, 27 July.

59. Requirements, as in n. 54.

60. *Peace and War*, p. 440.

61. *Events*, p. 219.

62. *Peace and War*, p. 562.

63. *Events*, p. 254.

64. Message to the Congress, in *Peace and War*, pp. 564-67.

65. Agreement signed 27 March 1941 (*Events*, p. 274).

66. John Bartlet Brebner, *North Atlantic Triangle: The Interplay of Canada, the United States and Great Britain* (New Haven, 1945).

67. History, First Air Force, III, Pt. 10, 1-4.

68. *Ibid.*; ltr., Sec. of War to the President, 28 Nov. 1940; Survey of Air Base Sites in Newfoundland, 18 Oct.-1 Nov. 1940.

69. Survey of Air Base Sites in Newfoundland, 18 Oct.-1 Nov. 1940.

70. Statement by the Department of State, 10 Apr. 1941, in *Peace and War*, p. 641.

71. Text of the Agreement, *ibid.*, pp. 642-46.

72. Ltr., C/NO to Navy WPD, *et al.*, 6 May 1941.

73. Memo for C/S from WPD, Feb. 1941.

74. Message to the Congress, in *Peace and War*, pp. 686-90.

75. Histories, 33d Fighter Sq. and 556th Signal Aircraft Warning Bn.

76. SPOBS, as in n. 23.

77. 24 November (*Events*, p. 304).

78. AAF Historical Study No. 42, Air Defense of the Panama Canal, 1 Jan. 1939-7 Dec. 1941, *passim*.

79. *Army Air Forces in the War against Japan, 1941-1942* (Washington, 1945), pp. 4-7.

80. AAF Historical Study No. 45, Development of the South Pacific Air Route, *passim*.

81. AAF Historical Study No. 4, Alaskan Air Defense and the Japanese Invasion of the Aleutians, pp. 1-27.

82. *Peace and War*, p. 485.

83. This seems to be borne out by both AIPO (Gallup) and *Fortune* polls. See P.E. Jacob, "Influences of World Events on U.S. Neutrality," *Public Opinion Quarterly*, IV (March 1940), 63-64.

84. AIPO polls: September 1938, 86 per cent thought the Allies would win; September 1939, 82 per cent.

85. Jacob, *op. cit.*, p. 61.

86. On an AIPO poll asking "Which side do you think will win the war if no other countries go into it?" only 43 per cent said England (20 July 1940). On the question of whether the United States would be drawn into the war, an AIPO poll of 15 Feb. 1940 reported: Yes, 32 per cent; No, 68 per cent. *Fortune*, Aug. 1940, reported: Yes, 43.8 per cent; No, 44.8 per cent; Don't Know, 11.4 per cent.

87. On this trend see Johnson, *op. cit.*, chaps. iv and v. In an AIPO poll of 18 July 1940 on aid to England, 53 per cent thought we should give more help, 41 per cent that we were giving enough now, 6 per cent that we were giving too much.

88. Address by President Roosevelt at Washington, 27 Oct. 1941, in *Peace and War*, pp. 767-72.

89. Address to the Congress, *ibid.*, p. 449.

90. Address to the Congress, 21 Sept., *ibid.*, p. 487; Neutrality Act of 4 Nov., *ibid.*, pp. 494-506.

91. AAF Reference History No. 6, Distribution of Air Materiel to the Allies 1939-44: Controls, Procedures, and Policies.

92. *Ibid.*

93. *Ibid.*

94. *Ibid.*

95. Address to the Congress, in *Peace and War*, pp. 608-11.
96. "Lend-Lease Act," 11 Mar. 1941, *ibid.*, pp. 627-30.
97. AAFRH-6.
98. E.R. Stettinius, Jr., *Lend-Lease, Weapon for Victory* (New York, 1944), p. 89.
99. *Events*, p. 275.
100. United States-British Staff Conversations: Air Collaboration (short title, ABC-2), 29 Mar. 1941.
101. Radio address, in *Peace and War*, pp. 599-608.
102. Draft AAF Historical Study, Logistical Plans and Problems, 1941-43, with Special Reference to Build-up of the Eighth Air Force, p. 3.
103. Munitions Requirements of the AAF for the Defeat of Our Potential Enemies (short title, AWPDP/1), Tabs 1 and 14.
104. AAFRH-6.
105. B.H. (41) 10, Conference on British-U.S. Production, Victory Requirements, Interim Report, 17 Sept. 1941.
106. B.H. (41) 14, Conference on British-U.S. Production, Victory Requirements, Report by Planning Committee, 19 Sept. 1941; B.H. (41) 2d Mtg. of War Cabinet, 20 Sept. 1941.
107. See sources in n. 106.
108. Stettinius, *op. cit.*, pp. 125-26.
109. AAFRH-6.
110. Ltr., Roosevelt to Stimson, 18 Sept. 1941, in WP I-General.
111. Release of Airplanes and Related Equipment for Defense Aid, 9 Sept. 1941 (short title, AWPDP/2).
112. See the following exchange of letters in WP I-General: FDR to Stimson, 18 Sept. 1941; Stimson to FDR, 23 Sept.; FDR to Stimson, 14 Oct.; Stimson to FDR, 16 Oct. and 21 Oct.
113. AAFRH-6.
114. *Ibid.*
115. *Ibid.*
116. United States-British Staff Conversations (short title, ABC-1), 27 Mar. 1941.
117. *Ibid.*, Annex III, U.S.-British Commonwealth Joint War Plan.
118. I have found no record of approval of ABC-1, but both RAINBOW No. 5 and AWPDP/1 are specifically based on it.
119. Memo for Col. Eaker from H.S. Hansell, 31 Oct. 1939.
120. Joint Army and Navy Basic War Plan, RAINBOW No. 5, 30 Apr. 1941; War Department Operations Plan, RAINBOW No. 5. The latter was approved by the Chief of Staff on 19 August 1941.
121. Radio address, 27 May 1941, in *Peace and War*, p. 664.
122. By the S/W, 2 June 1941; by the S/N, 29 May.
123. Joint Army and Navy Basic War Plan, RAINBOW No. 5 (Rev. No. 1).
124. Memo for AC/S, WPD from Brig. Gen. Carl Spaatz, C/AS, Revision of Rainbow No. 5, Where It Pertains to Air Action, n.d. (after 19 Aug. 1941).
125. *New York Times*, 17 Aug. 1941.
126. Text in *Peace and War*, pp. 718-19.
127. *New York Times*, 17 Aug. 1941.
128. General Strategy, Review by the British Chiefs of Staff, 31 July 1941, signed by Dudley Pound, J. G. Dill, C. Portal.
129. *New York Times*, 5 and 8 July 1941.
130. J.B. No. 325 (Serial 729), 25 Sept. 1941, Joint Board to SPOBS, Comments on General Strategy, Review by the British Chiefs of Staff.
131. *Ibid.*
132. AL (41) 8th Mtg., War Cabinet, American Liaison, 21 Nov. 1941.
133. Joint Board Estimate, p. 15.
134. App. I. Estimates based on "Two Ocean Navy" plus 20 per cent tonnage plus additional aircraft.
135. Joint Board Estimate, p. 15.
136. App. II.
137. AWPDP/1, Tabs 13 and 1.
138. Data for this paragraph taken from: memo for the C/AS, Notes on Preparation of AWPDP/1, 18 Nov. 1941,

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in AWPDP/1, Misc.; R&R, C/AS to OCAC, Further Expansion of AAF, 6 Oct. 1941, in III-B-1-#1 AAF; interviews with Col. R.D. Hughes, 15 Sept. 1943, and Brig. Gen. H.S. Hansell, 5 Oct. 1943, both at London, by B.C. Hopper. Hughes added these names to those listed in the text as collaborators on AWPDP/1: Col. Orville Anderson, Capt. Ball, Capt. Moss, and himself. The importance of Hansell's contribution is indicated by a memo, An Air Estimate of the Situations for the Employment of the Air Striking Force in Europe (ABC-1), forwarded through General Chaney of SPOBS.

139. AWPDP/1.
140. Tab 2.
141. Tabs 7-9.
142. Tab 2, par. 5.
143. Tab 2, par. 6.
144. Tab 3.
145. Tab 4.
146. Tab 10.
147. Tabs 11-12.
148. Tab 13.
149. USSBS, *Summary Report (European War)*, 30 Sept. 1945.
150. See articles on "New Moves toward an AEF," *Chicago Daily Tribune*, 19 Aug. 1941; and "More Steps toward an AEF," *ibid.*, 27 Nov. 1941.

NOTES TO CHAPTER 5

1. AC Field Manual 1-5, Employment of Aviation of the Army, 15 Apr. 1940.
2. *Biennial Report of C/S to Sec. of War*, 1 July 1941-30 June 1943.
3. AC Field Manual 1-5.
4. History, Air Defense Command, 26 Feb. 1940-2 June 1941.
5. Edgar McInnis, *The War: Second Year* (New York, 1941), pp. 6 ff.
6. History, Air Defense Command.
7. As cited in AAF Historical Study No. 19, Civilian Volunteer Activities in the AAF, pp. 8-10.
8. History, Air Defense Command.
9. History, First Air Force, Project I, Vol. I, Organizational Development.
10. *Ibid.*; History, Air Defense Command; History, Third Air Force, 1941-1944, pp. 6-10; History, III Fighter Command, 29 Apr.-6 Dec. 1941, pp. 1-31; History, IV Fighter Command, 18 Dec. 1940-31 Dec. 1944, pp. 1-10; History, I Interceptor Command, 2 June 1941-25 May 1942, Vol. I.
11. Fourth Air Force Historical Study III-1, Defense Plans and Operations in the Fourth Air Force through the Year 1941, Vol. I.
12. History, Army Airways Communications System, 1938-45, pp. 115-28.
13. History, I Interceptor Command.
14. History, First Air Force, III, Pt. 10, 4-7.
15. Ltr., Newfoundland Base Command to TAG, 28 Aug. 1941; 1st ind. (ltr., GHQ to TAG, 28 Aug. 1941), TAG to C/S GHQ, 13 Nov. 1941.
16. History, First Air Force, III, Pt. 10, 7-11.
17. Memo for DC/S for Air from AC/S, WPD, 26 June 1941; ltr., Maj. Gen. G.C. Brant to Arnold, 30 Oct. 1941; ltr., AC Weather Det., Newfoundland Air Base to C/AC, 7 Oct. 1941.
18. Ltr., Adm. Harold R. Stark to C/S U.S. Army, 8 Nov. 1941.
19. Ltr., Arnold to Maj. Gen. G.C. Brant, 27 Nov. 1941.
20. Report of the South Greenland Expedition, 17 Mar.-5 June 1941; memo for Spaatz from Capt. Paul C. Oscanyan, 6 Sept. 1941.
21. Memo for C/S from Sec. of Air Staff, 25 July 1941.
22. Extract, tel. conversation, Mr. Lovett and Gen. Brett, 14 Apr. 1941; memo for C/NO from C/S, 2 May 1941.
23. Ltr., TAG to C/S GHQ, 15 July 1941; AG 320.2 (11-5-41) MC-C-M, Activation of Greenland Base Command, 26 Nov. 1941.
24. Approved Garrisons, Overseas Bases, 9 Oct. 1941.
25. History, Army Airways Communications System, 1938-45, p. 128; His-

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tory, First Air Force, III, Pt. 10, 12-15; R&R, C/AS to A-4, 8 Dec. 1941.

26. History, First Air Force, III, Pt. 10, 15-18.

27. Operations Plan of Iceland Base Command, 1 Aug. 1941; J.B. No. 325 (Serial 697-1).

28. Memo for Brig. Gen. Clarence L. Tinker from Arnold, 9 Sept. 1941; ltr., Tinker to C/AAF, 7 Oct. 1941.

29. Memo for AC/AS, A-3 from Spaatz, 31 Oct. 1941.

30. Memo for Gen. Marshall from Col. H.W. Shelmire, 8 Nov. 1941.

31. R&R, AWPd to A-1, 2 Dec. 1941.

32. AAF Historical Study No. 42, Air Defense of the Panama Canal, 1 Jan. 1939-7 Dec. 1941, pp: 127, 187, 198.

33. *Ibid.*, pp. 1, 10-11, 60-61.

34. *Ibid.*, pp. 26-28, 38, 82-86, 113, 161-62, 171.

35. Ltr., TAG to Chief of Engineers, 3 Apr. 1941.

36. The Bermuda Defense Project (Initial), 16 Apr. 1941.

37. Approved Garrisons, Overseas Bases, 9 Oct. 1941.

38. AAFHS-42, pp. 171-72.

39. History, First Air Force, III, Pt. 10, 15-18.

40. The Panama Canal Defense Project, 1941, rev. 1 Dec. 1941.

41. AAFHS-42, pp. 112, 193-94.

42. *Ibid.*, pp. 125, 180-98.

43. AAF Historical Study No. 4, Alaskan Air Defense and the Japanese Invasion of the Aleutians, App. A.

44. History, Eleventh Air Force; History, XI Air Force Service Command.

45. AAFHS-4, pp. 10-15, 27-28.

46. *Ibid.*, pp. 11-15, 23.

47. *Ibid.*, pp. 18-19, 38-39, 97-102; History, Alaskan Div., ATC to 7 Dec. 1941.

48. History, 59th Gp., 3d Wing, AACs, 11 Jan.-8 Dec. 1941.

49. 7th ind. (original ltr. not listed), Hq. Western Defense Command to TAG, 10 Sept. 1941, in AFSHO files.

50. 9th ind. (*ibid.*), C/AAF to TAG, 16 Sept. 1941.

51. Alaska-Hawaii Journal, in AFSHO files.

52. History, XI Air Force Service Command.

53. History, 36th Bomb. Sq. to 7 Dec. 1941.

54. History, XI Air Force Service Command.

55. AAF Historical Study No. 41, Operational History of the Seventh Air Force; 7 Dec. 1941-6 Nov. 1943, p. 1.

56. Report of Army-Navy Board, Hawaii, 31 Oct. 1941.

57. AAFHS-41, p. 2.

58. Administrative History, Hq. Seventh Air Force, 1916-May 1944.

59. *Biennial Report*, C/S to Sec. of War, 1 July 1941-30 June 1943.

60. Radg. No. 2032, Herron to TAG, 31 Dec. 1940.

61. Fourth Air Force Historical Study IV-1, Processing and Ferrying Functions of the Fourth Air Force through the Year 1941, Vol. I.

62. AAF Reference History No. 11, Army Air Action in the Philippines and Netherlands East Indies, 1941-42, p. 13.

63. Fourth Air Force Historical Study IV-1, Vol. I.

64. Report of Army-Navy Board, Hawaii.

65. Excerpts from Joint Action of the Army and Navy, cited in memo for Brig. Gen. C.L. Tinker by Lt. Col. K.N. Walker, 13 Dec. 1941.

66. Joint Coastal Frontier Defense Plan-Hawaiian Coastal Frontier, 20 Aug. 1941, cited in memo in n. 65.

67. Ltr., Maj. Gen. F.L. Martin to CG AAF, 14 Aug. 1941, with A Plan for the Employment of Bombardment Aviation in the Defense of Oahu.

68. Memo for Gen. Gerow, WPD from Rear Adm. R.K. Turner, Director of Navy WPD, 25 Oct. 1941; memo for AC/S, WPD (unsigned), 30 Oct. 1941, in AFSHO files.

69. Radg. No. 967, Ft. Shafter to TAG, 28 Nov. 1941; memo for AC/S,

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WPD (unsigned), 29 Nov. 1941, both in AFSHO files.

70. Memo for Brig. Gen. C.L. Tinker from Lt. Col. K.N. Walker, 13 Dec. 1941; Hawaiian Department, Standard Operating Procedure, 5 Nov. 1941.

71. Radg. No. 1033, Short to C/AC, 4 Dec. 1941; radg. No. 1105, Short to TAG, 10 Dec. 1941; *AAF in the War against Japan, 1941-1942*, p. 7.

72. Statement of Sec. of War Stimson to Pearl Harbor Investigating Committee, *New York Times*, 22 Mar. 1946.

73. *AAF in the War against Japan, 1941-1942*, p. 4.

74. AAFRH-11, p. 8.

75. *Ibid.*, pp. 4-5.

76. *The American Yearbook, 1940*, pp. 15-16.

77. *Ibid.*

78. AAFRH-11, pp. 6-10.

79. Stimson statement as cited in n. 72.

80. AAFRH-11, pp. 10-12; memo for C/S by Arnold, 18 July 1941.

81. AAFRH-11, pp. 12-20.

82. *Ibid.*, 20-24.

83. AAF Historical Study No. 45, Development of the South Pacific Air Route, *passim*.

84. Memo for C/AS from H.L.G. [Harold L. George], 17 Nov. 1941.

85. AAFRH-11, pp. 26-29.

86. Fourth Air Force Historical Study IV-1, Vol. I.

87. AAFRH-11, pp. 29-34.

88. *Ibid.*, p. 35; AAFHS-45, pp. 37-38.

89. AAFRH-11, p. 36. See also Lewis H. Brereton, *The Brereton Diaries, 3 October 1941-8 May 1945* (New York, 1946), pp. 25-31.

90. *The Brereton Diaries*, pp. 36-37; radg. No. 249, TAG to CG USAFFE, ca. 29 Sept. 1941; radg. No. 498, MacArthur to TAG, 6 Oct. 1941.

91. AAFRH-11, p. 37; JBWP-R5-A, Revision of RAINBOW No. 5, approved by Joint Board, 19 Nov. 1941; ltr., C/S to CG USAFFE, 21 Nov. 1941.

92. AAFRH-11, pp. 37-38, 49; R&R, C/AS to CG AFCC, 14 Nov. 1941; msg., Adams to CG Hawaiian Dept., 14 Nov. 1941; R&R, C/AS to OCAC, 15 Nov. 1941; msg. #848, Martin to TAG, 15 Nov. 1941; memo for C/S from Spaatz, 22 Nov. 1941, concurred in by AC/S, G-3, 23 Nov., and WPD, 26 Nov.; ltr., Arnold to Martin, 1 Dec. 1941; ltr., MacArthur to Marshall, 1 Dec. 1941.

93. AAFRH-11, p. 41 ff.

94. Ltr., Hq. Air Force USAFFE to all post, group, and separate squadron commanders, 10 and 11 Nov. 1941.

95. History, 24th Pursuit Gp.

96. Memo for C/S by Spaatz, 13 Nov. 1941; msg. #919, MacArthur to TAG, 21 Nov. 1941; History, 24th Pursuit Gp.; History, V Fighter Command. According to Col. A.H. Campbell, who was primarily responsible for development of warning and communications facilities in the Philippines, it was planned to establish nineteen radar stations as follows: eight on Luzon, three on Mindanao, and one each on Lubang, Samar, Palawan, Jolo, Basilan, Tablas, Panay, and Negros islands. In addition to the two sets in operation on 8 December, one U.S. Marine mobile set was going into position on Batangas bay and would be in operation on 10 December, one had just reached position at Burgos in northern Luzon, two (one fixed and the other mobile) were going into position at Jose Panganiban in Camarines Norte, and one, lacking a power plant, was in storage. (Notes supplied R.L. Watson in an interview with Col. Campbell, 11 July 1947.)

97. Msg., ABDA 522A, Brereton to Arnold, 22 Feb. 1942; memos for Gen. Marshall from Maj. Gen. J.A. Green, 5 and 7 Nov. 1941; report by Lt. Col. S.M. Mellnik, AA in the Philippines, in History, Fifth Air Force and Its Predecessors, Pt. 1, Dec. 1941-Aug. 1942, App. II, Doc. 24; ltr., MacArthur to Marshall, 1 Dec. 1941.

98. Statement by Lt. Col. Ray Elsmore, in History, Fifth Air Force, Pt. 1, App. II, Doc. 30 a; unrecorded interview with Brig. Gen. Francis M. Brady by Maj. R.L. Watson, 7 Dec. 1944; ltr.,

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MacArthur to Marshall, 29 Nov. 1941; unrecorded interview with Col. Cecil E. Combs by Maj. R.L. Watson, 19 Jan. 1945.

99. Ltr., MacArthur to Marshall, 29 Nov. 1941; 1st ind. (ltr., Chief, AAF Historical Office to CG Third Air Force, 30 Jan. 1946), Brereton to Paul; Brady interview, as in n. 98; statement of Col. R.L. Fry, 5th Air Base Gp., 18 Apr. 1944, in History, Fifth Air Force, Pt. 1, App. II, Doc. 8.

100. 1st ind., Brereton to Paul, as in n. 99; Brady interview; Elsmore statement, as in n. 98; Fry statement, as in n. 99; interview with Maj. E.H. Heald, communications officer, V Air Force Service Command, 15 May 1944, in History, Fifth Air Force, Pt. 1, App. II, Doc. 17.

101. Brady interview; AG 370.5 (10-15-41) MC-C-M to CG AFCC, 22 Oct. 1941; AG 370.5 (10-27-41) MC-C-M to CG AFCC, 30 Oct. 1941; Fourth Air Force Historical Study IV-1, Vol. II, Docs. 42-66; Lt. Rob Roy Carruthers, in 435th [Bomb. Sq.] Overseas, in History, 19th Bomb. Gp.; History of USAFIA, in History, Fifth Air Force, Pt. 1, App. II, Doc. 26; History, 7th Bomb. Gp., 1942; AAFRH-11, pp. 34, 84-85; AAF Historical Study No. 9, The AAF in Australia to the Summer of 1942, pp. 11-12.

102. 1st ind., Brereton to Paul, as in n. 99; Elsmore statement, as in n. 98; History, Fifth Air Force, Pt. 1, pp. 8-9.

103. AAFRH-11, pp. 39-41; tel. conversations, 26, 27, 29 Nov. and 3, 4 Dec. 1941, in Fourth Air Force Historical Study IV-1, Vol. II, Docs. 42-46.

104. Statement of Sec. of War Stimson to Pearl Harbor Investigating Committee, *New York Times*, 22 Mar. 1946.

105. *Report of the Joint Committee on the Investigation of the Pearl Harbor Attack* (79th Cong., 2d sess.), Doc. 244, p. 102.

106. Msg. #624, Marshall to CG USAFFE, 27 Nov. 1941.

107. Ltr., Hart to MacArthur, 23 Oct. 1941; ltr., MacArthur to Hart, 7 Nov. 1941.

108. AAFRH-11, pp. 42-43; msg. #1004, MacArthur to Marshall, 28 Nov. 1941; Adm. Thomas C. Hart, Narrative of Events, Asiatic Fleet, Leading up to War, and from 8 Dec. 1941 to 15 Feb. 1942; Col. W.P. Fisher, Report on Philippine and Java Operations (n.d. but sometime during spring of 1942); Brady interview; History, Fifth Air Force, Pt. 1, App. II, Doc. 82.

109. USSBS (Pacific) Interrogation 74, Capt. Chihaya Takahashi, 20 Oct. 1945.

110. History, 24th Pursuit Gp.

111. Msg. #1105, MacArthur to AGWAR, 6 Dec. 1941.

112. AAFRH-11, pp. 49-50, 85.

113. *Ibid.*, p. 85; AAFHS-9, pp. 11-12.

114. Fourth Air Force Historical Study, IV-1, Vol. I.

115. Ltr., Short to Arnold, 6 Dec. 1941, cited in AAFHS-45, p. 62.

116. *Ibid.*, pp. 59-62, 88 (n. 17).

117. Ltr., Arnold to Martin, 1 Dec. 1941.

118. Fourth Air Force Historical Study IV-1, Vol. I.

119. *AAF in the War against Japan, 1941-1942*, p. 2.

NOTES TO CHAPTER 6

1. *Peace and War: U.S. Foreign Policy, 1931-1941*, pp. 136-48 and supporting documents; *Report of the Joint Committee on the Investigation of the Pearl Harbor Attack* (79th Cong., 2d sess.), Doc. 244, pp. 1-49.

2. *Report... Pearl Harbor Attack*, pp. 53-57; USSBS Interrogation No. 65, Capt. Y. Watanabe, 15 Oct. 1945; No. 113, Capt. M. Fuchido, 10 Oct. 1945; No. 479, Capt. M. Genda, 28-29 Nov. 1945; No. 603, Capt. M. Fuchido, 28 Nov. 1945.

3. Interrogations cited in n. 2; *Hearings before the Joint Committee on the Investigation of the Pearl Harbor Attack*, Pt. 13, Exh. 8-B, 420-22.

4. *Report... Pearl Harbor Attack*, p. 57, which apparently regards an earlier reconnaissance flight as a separate wave,

describes the attack as having been made in three waves rather than two. The operations order and interrogation of participating personnel indicate that the actual attack was launched in two waves. (See *Hearings... Pearl Harbor Attack*, Pt. 13, Exh. 8-B, 420-22 and Exh. 8-C, 426-27; USSBS Interrogations 113 and 603.) The *Report... Pearl Harbor Attack*, p. 58, gives a slightly different breakdown of the number of planes employed, with the following totals: 81 fighters, 135 dive bombers, 104 horizontal bombers, and 40 torpedo planes.

5. *Report... Pearl Harbor Attack*, pp. 138-40; Walter Karig et al., *Battle Report* (New York, 1944), I, 12-17; ltr., Brig. Gen. H.C. Davidson to CG Hawaiian Air Force, 18 Dec. 1941, in History, VII Fighter Command; AAF Historical Study No. 41, Operational History of the Seventh Air Force, 7 Dec. 1941-6 Nov. 1943.

6. *Battle Report*, pp. 28-38; USSBS Intrs. 65, 113, and 479.

7. *Report... Pearl Harbor Attack*, pp. 64, 69. See also *Battle Report*, pp. 93-96 and Plate XV. The additional loss of five incoming planes from the carrier *Enterprise* brought the total loss of naval aircraft to ninety-two, and to this figure were added at least thirty planes badly damaged.

8. *Report... Pearl Harbor Attack*, p. 62; AAFHS-41.

9. AAFHS-41.

10. *Ibid.*; ltr., Gen. Davidson to CG Hawaiian Air Force, 18 Dec. 1941. See also citations of the pilots mentioned.

11. Records of tel. conversations in Fourth Air Force Historical Study IV-1, Processing and Ferrying Functions, 1941, Vol. II, Docs. 42-66; Histories, 19th Bomb. Gp. and 435th Bomb. Sq.; 435th [Bomb. Sq.] Overseas.

12. AAFHS-41, especially App. 3, War Diary kept by A-3, Hawaiian Air Force, 7-31 Dec. 1941.

13. *Report... Pearl Harbor Attack*, p. 141.

14. USSBS Intrs. 65, 113, and 479; *Hearings... Pearl Harbor Attack*, Pt. 13, Exh. 8-C, 426-27.

15. Memo for Roberts Commission by Hq. Hawaiian Air Force, 26 Dec. 1941, in AAFHS-41, App. 2. See also p. 6. *Report... Pearl Harbor Attack*, p. 65, states: "A total of 96 Army planes were lost as a result of enemy action, this figure including aircraft destroyed in depots and those damaged planes which were subsequently stripped for parts."

16. AAFHS-41, pp. 5-6; *Hearings... Pearl Harbor Attack*, Pt. 12, 325, lists Army casualties as follows: killed in action 194, wounded in action 360, missing in action 22, died nonbattle 2, declared dead 1, and died of wounds 21, for a total of 600.

17. USSBS Intrs. 113 and 603; *Report... Pearl Harbor Attack*, p. 64, suggests that the presence of U.S. Naval Task Force 12 south of Midway was probably the deciding factor.

18. USSBS Intrs. 503, Vice Adm. Shigeru Fukudome, 9 Dec. 1945; 424, Capt. Bunzo Shibata, 18 Nov. 1945; and 74, Capt. Chihaya Takahashi, 20 Oct. 1945.

19. USSBS Intr. 74, Capt. Chihaya Takahashi, 20 Oct. 1945; USSBS, *Summary Report (Pacific War)*, 1 July 1946.

20. 1st ind. (ltr., Chief, AAF Historical Office to CG Third Air Force, 30 Jan. 1946), Brereton to Paul; History, Fifth Air Force and Its Predecessors, Pt. 1, Dec. 1941-Aug. 1942, 8-9.

21. History, Fifth Air Force, Pt. 1, Dec. 1941-Aug. 1942, pp. 8-9; History, 24th Pursuit Gp.; Statement of Personal Experience, made by Maj. Stewart W. Robb at the request of historical personnel, 30 Nov. 1944; statement by Maj. David L. Obert, 14 May 1945.

22. USSBS Intr. 601, 28 Nov. 1945, Comdr. Ryosuke Nomura, who during the invasion of the Celebes was air operations officer of the 23d Air Flotilla; Operations of the Japanese Navy in the Invasion of the Philippines, 15 May 1946, ATIS Doc. 19692.

23. History, 24th Pursuit Gp.

24. Histories, 27th Bomb. Gp. and 24th Pursuit Gp.

25. Interview with Col. Eugene Eubank, 2 July 1942; unrecorded interview

with Brig. Gen. Francis M. Brady by author, 7 Dec. 1944; talk by Col. W.P. Fisher, 20 Mar. 1942, in AAG 385, Warfare; 1st ind., Brereton to Paul, as cited in n. 20; Allison Ind, *Bataan, the Judgment Seat* (New York, 1944), pp. 89-94. See also n. 31 below.

26. Ind, *Bataan*, pp. 92-93. Colonel Ind, in December 1941 a captain and an intelligence officer with the Far East Air Force, states that the objective folders were complete enough to make the mission "a very far cry from the blind stab it would have had to be otherwise." The American policy had been to avoid any "overt act," and thus, while regular reconnaissance missions had on occasion taken our flyers to within three miles of the Formosan coast, no photographic mission over Formosa itself had been flown. (Interview with Col. W.P. Fisher by author, 17 June 1947; History, 19th Bomb. Gp., App. A.)

27. Brady interview.

28. *Ibid.*; 1st ind., Brereton to Paul; but see entry from Summary of Activities, Hq. Far East Air Force, quoted on p. 207.

29. A request of 27 May 1944 from the Fifth Air Force, initiated by the historian of that organization, to General Headquarters, Southwest Pacific Area for information from personnel holding key positions under General MacArthur at the outbreak of war undertook to supplement the record available in AAF files. Among other things, information was sought regarding prewar plans for the employment of the Far East Air Force, the possible effect of the political status of the Philippines on decisions not to assume the initiative against the Japanese after official confirmation of the Pearl Harbor attack had been received, and an indication of such orders as may have been issued to the air force on the morning of 8 December relating to the use of bombers based on Clark Field. The request was returned, however, with indorsement of 7 June 1944 as follows: "There is no official information in this headquarters bearing upon the questions propounded in basic communication." (See Doc. 20 in History, Fifth Air Force, Pt. 1, App. II.)

30. 1st ind., Brereton to Paul; Eubank and Brady interviews; talk by Colonel Fisher, as cited in n. 25; Ind, *Bataan*, pp. 89-94; ltr., Lt. Don Mitchell to Bayrd Still, 30 Nov. 1941. It is interesting to note that the Japanese apparently expected an early attack on Formosa by the B-17's. In an interrogation of 28 November 1945 (USSBS 601) Comdr. Ryosuke Nomura recalled that because of the delay in launching the Japanese attack it was greatly feared that American aircraft would initiate the first attack. That fear, he declared, had been greatly increased at 0800 when an intercepted American broadcast indicated that such an attack was being considered and that the B-17's would arrive over Formosa at 1010.

31. Memo for Col. W.J. Paul from Lt. Gen. Lewis H. Brereton, 6 Aug. 1947, in reply to memo for Brereton from Paul, 22 July 1947. While General Brereton was consulting with General Sutherland, a meeting of the air force staff was held at Headquarters, Far East Air Force. On 6 April 1944, Maj. John C. Ankeny, Fifth Air Force historian, put the following questions to Col. Harold Eads, who had attended that meeting on the morning of 8 December 1941:

"1. Who held the following points of view (8 December 1941): (a) Strike at the Japs in Formosa with everything we had without delay? (b) Wait for an overt act before hitting? (c) Send out a reconnaissance to Formosa and hit targets of opportunity? (d) Send out one or two planes (B-17's) for reconnaissance only?"

"2. What took place in the meeting with Colonel Brady before General Brereton arrived on the morning of 8 December 1941?"

"3. What took place after General Brereton arrived?"

Colonel Eads answered these questions as follows: "Everyone attending the meeting on the morning of 8 December held the view propounded in paragraph 'a.' We were getting ready to proceed on that basis. No one held views 'b,' 'c,' and 'd.'... As I recall it, when General Brereton arrived at the meeting, he said we could not carry out the plan

we had decided upon; the orders were we couldn't attack until we were attacked; that we could go out on photo reccos in force (loaded with bombs) but were not to use them unless attacked." (Doc. 10, in History, Fifth Air Force, Pt. 1, App. II.)

32. Other than General Brereton's accounts as given in answer to letter from Colonel Paul, Chief, AAF Historical Office, 30 Jan. 1946, and *The Brereton Diaries*, pp. 36 ff., the most detailed narrative is the history of the 24th Pursuit Group. In an unrecorded interview of some two hours' duration with the author on 7 December 1944, General Brady in answer to specific questions growing out of the author's own research gave further corroboration to the essential details. Among other information supplied, he called attention to a report which he and Brereton had prepared and forwarded to Washington, as he recalled it, late in January or early in February 1942. Unfortunately, an extended and intensive search through AAF and War Department files failed to locate a copy. In reply to a question regarding this report, General Brereton (see memo for Paul, 6 Aug. 1947) stated: "I do not have a copy of the paper referred to. I was informed that this paper was in General Arnold's own secret files, presumably it had been shown to the Chief of Staff. Whether it is still in existence, I do not know." (See also Eubank interview; Fisher Report on Philippine and Java Operations received in spring of 1942; History, Fifth Air Force, Pt. 1, 11 ff.)

33. 1st ind., Brereton to Paul, where the general recalls, as in his published *Diaries*, that at this time he instructed Eugene L. Eubank, bomber commander who had flown down from Clark Field, to prepare for an operation against Takao harbor with target priority for enemy transports and warships and at the same time to make ready three planes for reconnaissance of airfields on Formosa.

34. History, 24th Pursuit Gp.

35. 1st ind., Brereton to Paul; History, 30th Bomb. Sq.

36. History, 24th Pursuit Gp.; Summary of Activities, 8 Dec. 1941.

37. 1st ind., Brereton to Paul; *The Brereton Diaries*, pp. 40-41. General Brereton's memo of 6 Aug. 1947 (cited in note 31 above) indicates that authorization for the reconnaissance mission to Formosa may have been received as early as 0800. With reference to a "second conference" by telephone with Sutherland at "approximately 8 a.m.," Brereton states that "reconnaissance missions were authorized in this conversation," but his recollection in the same place that the order to Eubank for a specific mission of reconnaissance over Formosa was not given until after 1000 tallies with his previously given account in *The Brereton Diaries*, p. 40, and in 1st ind., Brereton to Paul.

38. 1st ind., Brereton to Paul; Brady interview; Fisher report, as cited in n. 32.

39. History, 24th Pursuit Gp.

40. Interview with Col. A.H. Campbell by author, 11 July 1947.

41. *Ibid.*

42. History, 24th Pursuit Gp.

43. 1st ind. (ltr., Chief, Air Historical Office to CG Thirteenth AF, 17 July 1945), Maj. Gen. E. L. Eubank to CG AAF, 5 Aug. 1947. See also, in support of General Eubank's statement, Fisher report and talk, confirmed in an interview with author, 17 June 1947; 1st ind., Brereton to Paul; History, 24th Pursuit Gp.; ltr., Col. A.W. Marriner, Dir. of Communications to CG USAFIA, 2 Apr. 1942; Ind, *Bataan*, p. 99. Most of the sources attribute the failure to a breakdown of communications. Thus the history of the 24th Pursuit Group states that "at approximately 11:45 an unidentified report was received of a bombardment formation over Lingayen Gulf, headed south," but it adds "that communications breakdown prevented proper identification." This view is not borne out by the testimony of Colonel Campbell. (See n. 40.)

44. USSBS Intrs. 424 and 601; Operations of the Japanese Navy in the Invasion of the Philippines.

45. History, 24th Pursuit Gp.; Fisher report. According to Japanese sources,

fifty-four "land attack planes" and thirty-four fighters participated in the attack on Clark, while an equal number of bombers and fifty fighters struck at Iba. (See Operations of the Japanese Navy in the Invasion of the Philippines.)

46. History, 24th Pursuit Gp.; History, Fifth Air Force, Pt. 1, p. 12; GO 48, Hq. USAFFE, 21 Dec. 1941; statement, as in n. 21, of Maj. Stewart W. Robb, formerly of 34th Sq. The flight leader of the 34th Squadron states that its eighteen P-35's took to the air and proceeded to Clark Field without orders. (Maj. Ben S. Brown statement, 25 Oct. 1944, in V Fighter Command docs.)

47. History, 19th Bomb. Gp., App. B (19th Gp. Operations Record). It will be recalled that the B-17's for several days had been flying regular reconnaissance missions which had on occasion taken them to within three miles of the coast of Formosa. On this morning Carpenter was patrolling the waters east of Luzon. (Fisher interview, 17 June 1947; History, 19th Bomb. Gp., App. A.)

48. 19th Gp. Operations Record; GO 16, Hq. FEAF, Bandoeng, 12 Feb. 1942. On 18 April 1944, Col. R.L. Fry, who was executive officer of the 5th Air Base Group at Del Monte in December 1941, made the following statement: "In response to orders from Clark Field at 0400 hours 8th December, one B-17 under Lieutenant Tash took off from Del Monte at 0945 for Clark Field to have a camera installed so that a photographic mission could be flown over Formosa." (Doc. 8, in History, Fifth Air Force, Pt. 1, App. II.) This indicates that the order from Clark Field was sent to Del Monte immediately after word was received that Pearl Harbor had been attacked. But it should be pointed out that Maj. E.H. Heald, who in December 1941 had helped to set up communications for the 5th Air Base Group, stated in May 1944 that "at the time of the attack upon the Philippines" he received the "first message radioed to Del Monte from General Headquarters" at approximately 0630, and that five minutes later another arrived from Colonel Eubank. The first message read: "Hostilities have begun. All Airdromes alert." (Doc. 17, same

history.) It should be noted that both Colonel Fry's and Major Heald's statements were made more than two years after the events being described. A possible explanation for the differences in time stated is that Tash's B-17 was sent to Clark Field merely to have certain repairs made on his plane as is stated in the 19th Group Operations Record, and that the order received from Clark Field was not related in any way to the outbreak of hostilities.

49. History, 24th Pursuit Gp.; GO 11, Hq. Fifth Air Force, 30 Sept. 1942; Statement of Personal Experience, made by Lt. Col. W.A. Sheppard and Maj. E.B. Gilmore at the request of historical personnel, 1 Feb. 1945; Ind, *Bataan*, pp. 103-4. See also n. 45 above.

50. GO 17, Hq. FEAF, 23 Feb. 1942; GO 2, Hq. Southwest Pacific Command, Lembang, 15 Feb. 1942; GO 48, Hq. USAFFE, 21 Dec. 1941; GO 52, Hq. Fifth Air Force, 18 Dec. 1942; Fisher report; Brady interview, as in n. 25; interview with Col. Cecil E. Combs by author, 19 Jan. 1945; History, 19th Bomb. Gp., App. A; Lt. Col. William J. Kennard, Report on Philippine and Australian Activities, 14 Nov. 1942; interview with Lt. Gen. Richard K. Sutherland by W.D. Edmonds, 4 June 1945.

51. Fisher report; History, 24th Pursuit Gp.; msg. #1133, Manila to WD, 8 Dec. 1941; msg. #1135, Manila to WD, recd. 9 Dec. 1941; memo for S/W by Spaatz, C/AS, 8 Dec. 1941; Robb, Sheppard and Gilmore, and Obert statements (see n. 21 and n. 49); Ind, *Bataan*, pp. 102-6.

52. Available records of the two squadrons, the 28th and 30th, which were at Clark on 8 December, state that the B-17's were "dispersed" at the time of the attack. Col. W.P. Fisher, commander of the 28th Squadron in December 1941, has stated that it was standard operational procedure for his aircraft to go to their assigned positions as soon as they landed, and that they were dispersed on this occasion. On the other hand, dispersal facilities had not been completed, and it was impossible to provide complete security from air attack. (History,

30th Bomb. Sq.; Fisher talk and Fisher report, confirmed in statement to the author in interview of 17 June 1947; Combs interview.) There is some evidence that several planes had been left in an unusually exposed position. (Ind, *Bataan*, p. 101.) It should be emphasized, however, that the bombing did little damage, and that the low-flying enemy pursuits picked out the B-17's wherever they were and riddled them. Although this fact does not excuse a lack of precaution, it is nevertheless true that unless the B-17's could have been completely hidden, the widest possible dispersal would have made little difference.

53. See sources in n. 51 and Summary of Activities, 9 Dec. 1941, 0954, where "Nichols Field reports 12 casualties—4 serious, 3 killed." The enemy had planned a full-scale attack on the fields near Manila, but weather restricted their effort to an attack by seven planes on Nichols. (Operations of the Japanese Navy in the Invasion of the Philippines.)

54. See again sources in n. 51 and also Fisher talk.

55. Msg. #736, TAG to CG USAFFE, 7 Dec. 1941.

56. History, 24th Pursuit Gp.; Obert statement; Ind, *Bataan*, pp. 111-12.

57. Report by Lt. Col. S.M. Mellnik, AA in the Philippines, Doc. 24, in History, Fifth Air Force, Pt. 1, App. II.

58. 19th Gp. Operations Record. But see Summary of Activities, 9 Dec. 1941, 1100, where "C.O. Del Monte reported that 16 B-17's on way to Clark Field" and in a garbled message indicated one or more had turned back "with wounded crew members." The original plan for a mission at dawn under Field Order No. 2 (see Summary, 8 Dec. 1941, 1550) seems to have been changed by Field Order No. 3, transmitted to "C.O. Bomber Command, Clark Field" at 2356, 8 December.

59. Adm. Thomas C. Hart, Narrative of Events, Asiatic Fleet.

60. Sheppard and Gilmore statement; GO 48, Hq. USAFFE, 21 Dec. 1941; Summary of Activities, 10 Dec. 1941, where under 0220 appears this entry: "P-40 off 02:10 should be in between

03:00-03:30. Lt. Mahoney pilot"; and there follows under 0513: "Mahoney to Brady—six transports off Vigan Bay—11 Naval vessels off Vigan."

61. History, 24th Pursuit Gp.; 19th Gp. Operations Record; Robb statement; GO 48, Hq. USAFFE, 21 Dec. 1941; USSBS Intr. 90, Capt. Kawakita Ishihara, n.d.; USSBS Intr. 331, Capt. Mitsugo Ihara, 10 Nov. 1945. According to the officer who took Maret's place as commanding officer of the 34th Squadron, a Japanese air raid resulted in the destruction of twelve P-35's shortly after they landed from the Vigan mission. (Brown statement, as cited in n. 46.) See also Summary of Activities, 10 Dec. 1941, 0530, 0625 which notes that "8 B-17's loaded, left Clark for attack on vessels, priority transports and landing parties," and 1211 where "Grover reports 2nd Observation Sqdn. (P-35) reports attack on 7 transports at Vigan with .50 cal. 3 P-35's were lost in the encounter including sqdn commander at 09:15. One transport blew up."

62. This is the only loss which has been confirmed by the Joint Army-Navy Assessment Commission. (Japanese Naval and Merchant Losses during World War II, Feb. 1947, prepared by the Joint Army-Navy Assessment Commission [JANAC].)

63. 19th Gp. Operations Record; GO 2, Hq. Southwest Pacific Command, Lembang, 15 Feb. 1942: USSBS reports indicate that there were no aircraft carriers or battleships involved in the Vigan and Aparri landings. (See also Summary of Activities, 10 Dec. 1941, under 0925.)

64. 19th Gp. Operations Record.

65. Ltr., Col. E.L. Eubank to CG FEAF, 19 Feb. 1942, Narrative Report of Flight of Capt. Colin P. Kelly, Doc. 25 in History, Fifth Air Force, Pt. 1, App. II.

66. *Ibid.*, msg., Manila to TAG, 11 Dec. 1941; msg., MacArthur to TAG, 28 Dec. 1941; msg. #5, Java to TAG, 15 Feb. 1942; Summary of Activities, 10 Dec. 1941, 1700.

67. USSBS Intrs. 33, Vice Adm. Kazutaka Shiraichi, 15 Oct. 1945; 90,

Capt. Kawakita Ishihara, n.d.; 94, Comdr. Yutaka Isawa, 12 Oct. 1945; 331, Capt. Mitsugo Ihara, 10 Nov. 1945; 387, Capt. Kameo Sonokawa, 14 Nov. 1945; 424, Capt. Bunzo Shibata, 18 Nov. 1945.

68. Ltr., Eubank to CG FEAF, as in n. 65.

69. TM 1-10.

70. History, Fifth Air Force, Pt. 1, p. 17; 19th Gp. Operations Record; Summary of Activities, 10 Dec. 1941, 1430 which records "Discussion of situation by Staff: In view of the fact that Paratroops have been landed in many places in the islands, General Brereton is of the opinion that it is highly dangerous to allow Bombardment to remain in this vicinity after dark." Under 11 Dec. 1941, 0030, appears "Telephonic orders to move all B-17's southward prior to daybreak and execute dawn attack on targets in Linguayan Port." (See also 11 Dec. 1941, 1009.)

71. History, 24th Pursuit Gp.; Obert statement; Sheppard and Gilmore statement; combat reports of Capt. William M. Rowe, in A-2 Library. Operations of the Japanese Navy in the Invasion of the Philippines indicates that thirty-four fighters and twenty-seven bombers were sent against Nielson, Nichols, and Camp Murphy, twenty-seven bombers against Cavite and the same number against shipping at Manila, and eighteen fighters against Del Carmen. Japanese pilots claimed fifty planes shot down and fifty-three heavily damaged or burned.

72. Memo for C/S by Acting AC/S, G-2, 10 Dec. 1942.

73. It should be added that prior to the attack on Cavite, American pursuits had intercepted another formation of Jap planes over central Luzon and shot two down, and that later on Filipino pilots flew their obsolete P-26's against an enemy formation. (Sheppard and Gilmore statement; GO 48 and 27, Hq. USAFFE, 21 Dec. 1941 and 16 Feb. 1942.)

74. History, 24th Pursuit Gp.; msg., Manila to AGWAR, 12 Dec. 1941.

75. Msg., Manila to WD, 11 Dec. 1941; msg., Manila to AGWAR, 12 Dec. 1941; Hart, Narrative of Events; GO 48 and 27, Hq. USAFFE, 21 Dec. 1941, and

16 Feb. 1942; msg., Arnold to CG USAFFE, 24 Dec. 1941.

76. 19th Gp. Operations Record; msg. #1712, Manila to TAG, 15 Dec. 1941; GO 16, Hq. FEAF, Bandoeng, 1 Feb. 1942; GO 2, Hq. Southwest Pacific Command, Lembang, 15 Feb. 1942; GO 12, Hq. Allied Air Forces, 25 May 1942.

77. History, 24th Pursuit Gp.; GO 52, Hq. USAFFE, 24 Dec. 1941.

78. History, Fifth Air Force, Pt. 1, p. 20, and statement of Col. Ray Elsmore, Doc. 30a, App. II. A few days after the war began, one P-40 was dispatched to Mindanao to serve as a personal reconnaissance plane for General Sharp, in command on that island. On 4 January, nine P-40's left Bataan for Del Monte. Five of these planes arrived; and about a week later two P-35's arrived. (Obert statement; History, 24th Pursuit Gp.)

79. 19th Gp. Operations Record; Elsmore statement.

80. History, 27th Bomb. Gp.

81. Msgs., MacArthur to Marshall, 10 Dec. 1941; Manila to WD, 13 Dec. 1941; #40, Manila to TAG, 22 Dec. 1941.

82. Memo for MacArthur from Brereton, 14 Dec. 1941.

83. Msg. #787, TAG to CG USAFFE, 15 Dec. 1941; ltr. to CG AFCC, incl. to R&R, OPD to Air Service Command, 15 Dec. 1941; ltr., TAG to CG AFCC, 23 Dec. 1941; msg. #750, Adams to MacArthur, 23 Dec. 1941.

84. Msgs., Manila to WD and TAG, 19 Dec. 1941; #13, 20 Dec.; #30 and #544, 21 Dec.; #3 and #34, 22 Dec.; Brief Chronology of the Philippine Campaign, Col. Ray Elsmore's personal papers, Doc. 82, in History, Fifth Air Force, Pt. 1, App. II; Sutherland interview, as cited in n. 50.

85. 19th Gp. Operations Record; msg. #41, Manila to TAG, 23 Dec. 1941; GO 16, Hq. FEAF, Bandoeng, 12 Feb. 1942; GO 2, Hq. SWP Command, Lembang, 15 Feb. 1942.

86. GO 2, Hq. SWP Command, Lembang, 15 Feb. 1942; GO 10, Hq. Fifth Air Force, 22 Sept. 1942; GO 16, Hq. FEAF, Bandoeng, 12 Feb. 1942; GO 38,

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Hq. Fifth Air Force, 2 Dec. 1942; 19th Gp. Operations Record.

87. History, 24th Pursuit Gp.; History, Fifth Air Force, Pt. 1, pp. 26-27; GO 25, Hq. Allied Air Forces, 4 July 1942; Robb statement; Sheppard and Gilmore statement; Ind, *Bataan*, pp. 154-55.

88. History, 27th Bomb. Gp.; Diary of Lt. Col. James B. McAfee, 1 Nov. 1941-5 Oct. 1942.

89. Msg., Ft. Mills to AGO, 28 Dec. 1941; *The Brereton Diaries*, pp. 63-64; FEAF Hq. Diary, Doc. 28, in History, Fifth Air Force, Pt. 1, App. II; Elsmore statement.

90. Fisher report.

91. Histories, 24th Pursuit Gp., Fifth Air Force, Pt. 1, pp. 27-29, and 27th Bomb. Gp.; Robb and Obert statements; Ind, *Bataan*, pp. 167 ff.

92. History of USAFIA, Doc. 26, in History, Fifth Air Force, Pt. 1, App. II; memo for CNO by Gerow, 12 Dec. 1941; msg., MacArthur to WD, 18 Dec. 1941; msg. #40, Melbourne to WD, 18 Dec. 1941; GO 4, Task Force, South Pacific, 19 Dec. 1941.

93. History of USAFIA, as in n. 92; msg. #71, AG to Brig. Gen. John Magruder, 15 Dec. 1941; memo for TAG by Acting AC/S Gerow, 17 Dec. 1942; msg. #1015, Brett to TAG from Chungking, 23 Dec. 1941; msg. #130, Chungking to TAG, 27 Dec. 1941; History, Fifth Air Force, Pt. 2, 1 Jan.-6 Mar. 1942, p. 1.

94. History of G-4, USAFIA, Doc. 81, in History, Fifth Air Force, Pt. 1, App. II; History of USAFIA.

95. History of G-4, USAFIA, as in n. 94; History of USAFIA; memo for Somervell by Eisenhower, recd. 17 Dec. 1941; msg., MacArthur to AGO, 18 Dec. 1941; History, 27th Gp.; *The Brereton Diaries*, pp. 74-75.

96. History, Fifth Air Force, Pt. 2, 1 Jan.-6 Mar. 1942. See also below, chap. 11.

97. AAF Historical Study No. 45, Development of the South Pacific Air Route.

98. Msg., Marshall to CG USAFIA, n.d., Doc. 48, in History, Fifth Air Force, Pt. 1, App. II; interview with Maj. John

T. Trotter by author, 18 Oct. 1944; Gen. Barnes' Description of Australia, Doc. 51 a, in History, Fifth Air Force, Pt. 1, App. II.

99. Barnes' Description of Australia; msg. #1371, London (Royce) to WD, 16 Dec. 1941.

100. Notes on Conferences Held at Amberley, 28 and 29 Dec. 1941, Doc. 64, in History, Fifth Air Force, Pt. 1, App. II; msg. #612, Adams to CG USAFFE, 27 Dec. 1941; msg. #865, Adams to CG USAFFE, 30 Dec. 1941; History, 7th Bomb. Gp.; ltr., Clagett to C/AS, 24 Dec. 1941, Doc. 12, in History, Fifth Air Force, Pt. 1, App. II.

101. Notes on Conferences Held at Amberley; msg., MacArthur to TAG, 15 Dec. 1941.

102. Msg., Marshall to [USAFIA, 25 Dec. 1941], Doc. 47, in History, Fifth Air Force, Pt. 1, App. II; msg., MacArthur to AGWAR, 25 Dec. 1941; msg., Brereton to TAG, OPNAV 251501 CRO33, 26 Dec. 1941; msg., Brereton to TAG (cable from Navy, #CRO369, 26 Dec. 1941); msg., Clagett to Brereton, n.d., Doc. 76, in History, Fifth Air Force, Pt. 1, App. II; Brereton to TAG, #300630, CRO828, 31 Dec. 1941; *The Brereton Diaries*, pp. 62 ff.

103. Msg., Clagett to C/S, 31 Dec. 1941, Doc. 77, in History, Fifth Air Force, Pt. 1, App. II; msg. #54, Clagett to C/S, 29 Dec. 1941; Arnold to Brett, 25 Dec. 1941. The original route planned for planes with a range of approximately 500 miles: Brisbane or Townsville, Cloncurry, [Charleville], Daly Waters, Darwin, Koepang in Timor, Makassar in Celebes, Balikpapan (or Samarinda II) and Tarakan in Borneo, Del Monte (or Malabang, Zamboanga, Iwahig). (Msg., MacArthur to AGWAR, 2 Dec. 1942, in AAG 452.1, Phil.) General Brereton indicates in his *Diaries*, however, that both he and Brett attempted to carry out their mission of supporting the defense of the Philippines. (*The Brereton Diaries*, p. 75.)

104. Msg. #36, Brett to C/S, 2 Jan. 1942; Notes on Conference Held on 3 Jan. 1942, Doc. 33, in History, Fifth Air Force, Pt. 1, App. II; msg., Brett to Adm.

Glassford, n.d., Doc. 66, in History, Fifth Air Force, Pt. 1, App. II.

105. Memo for TAG by Gerow, 25 Dec. 1941; memo for TAG by Gerow, 2 Jan. 1942; memo for C/S by Gerow, 3 Jan. 1942.

NOTES TO CHAPTER 7

1. *Cong. Rec.*, Vol. 87, Pt. 9, 9652.

2. Radio address, in *Peace and War: U.S. Foreign Policy, 1931-1941*, pp. 662-72.

3. For a summary of diplomatic negotiations and action taken, see pp. 118-47 and supporting documents in the same work. Also, *Report of the Joint Committee on the Investigation of the Pearl Harbor Attack* (79th Cong., 2d sess.), Doc. 244, pp. 1-47.

4. *Report... Pearl Harbor Attack*, pp. 300-05.

5. *Ibid.*, pp. 38-42.

6. Letter of Instruction No. 1, 7 Dec. 1941; No. 2, 11 Dec. 1941.

7. Memo for C/S, Air Estimate of the Situation, 6:30 a.m., 8 Dec. 1941, in AFSHO files.

8. AWPD/4, Sec. V, 1 D. For breakdown of forces by theaters, see Tab C.

9. *Peace and War*, p. 849.

10. Text in *Peace and War*, pp. 850-53.

11. *New York Times*, 22 Dec. 1941.

12. JCCSs-1, 24 Dec. 1941. At ARCA-DIA, the planning papers were designated "ABC-4," with appropriate sub-numbers; the minutes of the meetings, "JCCSs" and appropriate numbers. Most of them can be found in the ARCADIA Book in AFSHO files.

13. *Cong. Rec.*, Vol. 87, Pt. 9, 10117.

14. Unnumbered CM from HMS *Duke of York*, 18 Dec. 1941.

15. JCCSs-1, Annex No. 1; JCCSs-7, 31 Dec. 1941.

16. JCCSs-9, 11 Jan. 1942; JCCSs-10, 12 Jan. 1942.

17. ABC-4/6, 10 Jan. 1942; JCCSs-11, 13 Jan. 1942.

18. JCCSs-1. This was an earlier target date than had been set previously; cf. p. 158.

19. ABC-4/6; JCCSs-9.

20. *New York Times*, 27 Jan. 1942.

21. JCCSs-1; JCCSs-11.

22. R&R, Arnold to Spaatz, Conversation with Portal, 1 Jan. 1942; ltr., Arnold to Portal, 2 Jan. 1942.

23. ABC-4/6; JCCSs-11.

24. JCCSs-11.

25. ABC-4/1, 27 Dec. 1941; ABC-4/2, 28 Dec.; AAF Reference History No. 2, Origins of the Eighth Air Force: Plans, Organization, Doctrine, chap. i.

26. ABC-4/2a of 13 January was accepted on the 14th as a basis for further planning.

27. AAFRH-2, chap. i.

28. CCS 5/2, 3 Mar. 1942.

29. JCCSs-1.

30. The British submitted an appreciation to this effect which was concurred in by the U.S. JCS. *Ibid.*

31. JCCSs-7.

32. JCCSs-1, Annex I.

33. ABC-4/3, 29 Dec. 1941.

34. AAF Reference History No. 11, Army Air Action in the Philippines and Netherlands East Indies, 1941-42, pp. 95-98.

35. ABC-4/8, 10 Jan. 1942; JCCSs-10.

36. JCCSs-10.

37. *Ibid.*

38. JCCSs-12, 14 Jan. 1942.

39. JCCSs-2, 25 Dec. 1941.

40. JCCSs-5, 29 Dec. 1941.

41. *New York Times*, 4 Jan. 1942.

42. This was contained in ABC-4/5, first draft of which was dated 29 December.

43. E.R. Stettinius, Jr., *Lend-Lease, Weapon for Victory*, p. 109.

44. ABC-4/9, 10 Jan. 1942; JCCSs-8, 10 Jan. 1942.

45. Same sources.

46. The difficulties inherent in the situation are shown in AAF Historical

Study No. 12, The Tenth Air Force, 1942.

47. Memo for C/AS, Notes on Preparation of AWP/1, 18 Nov. 1941.

48. Quoted in draft AAF Historical Study, Logistical Plans and Problems, 1941-43, with Special Reference to Build-up of the Eighth Air Force.

49. Victory Requirements, a draft paper dated 5 Jan. 1942, in Col. H.L. George's notes on ARCADIA, in AFSHO files.

50. See n. 48.

51. *Cong. Rec.*, Vol. 88, Pt. I, 34.

52. Memo for US/W from R.A. Lovett, AS/W for Air, 12 Jan. 1942. The schedule was approved in letter, FDR to Undersecretary Patterson, 14 January.

53. JCCSs-1.

54. Allocation of Airplanes-1942, signed by Arnold and Portal on 13 Jan. 1942.

55. For objections by Harry Hopkins, see AAF Reference History No. 6, Distribution of Air Materiel to the Allies, 1939-44.

56. *Ibid.*

57. Stettinius, *op. cit.*, p. 217.

58. Memo for C/S from C/AS, Personnel for Completion of Army's Second Aviation Objective, 15 Dec. 1941. In addition to this authorized strength for the Air Corps, services with the Air Corps were listed at the following authorized strengths: Aircraft Warning Service, 21,850; Arms and Services, 120,232; National Guard, 6,119; for an over-all total of 496,736. Cf. Strength Report as of 31 Dec. 1941 by Enlisted Sec., Military Personnel Div., which gives a figure for enlisted men of 243,542, including 4,495 National Guard and 15,000 aviation cadets.

59. AAF Directory of Groups, 6 July 1942.

60. Unsigned note on OCAC staff conference in Col. H.L. George's ARCADIA file.

61. Memo for C/S from Arnold, 7 Jan. 1942.

62. *Ibid.*

63. Cited in Logistical Plans and Problems, 1941-43.

64. *The Official Guide of the Army Air Forces* (New York, 1944), p. 329.

65. Logistical Plans and Problems, 1941-43.

66. *Ibid.*

67. Data for this chart taken from: AAF Directory of Groups, 6 July 1942; memo for C/AAF from S/W, Expansion of the AAF during Calendar Year 1942, 19 Jan. 1942; memo for C/AAF from C/AS, AAF Expansion for 1943, 19 Jan. 1942.

68. *Peace and War*, pp. 850-53.

69. *Cong. Rec.*, Vol. 88, Pt. 1, 33.

70. SPOBS was set up 19 May 1941, the British Joint Staff Mission a little later.

71. JCCSs-8.

72. JCCSs-12. The paper as revised was ABC-4/CS4.

73. CCS 9, 24 Jan., and CCS 9/1, 10 Feb. 1942; JCS Memo for Information #175.

74. The first meeting of the JCS which he attended was 28 July 1942. Admiral Stark had meanwhile been relieved.

75. JCS 202, 8 Jan. 1943; Comments on JCS 202, 3 Apr. 1943. These deal with a suggestion, which was declined, to provide charters for the JCS and subsidiary agencies.

76. CCS 9/1, par. 3.

77. *Ibid.*, par. 4.

78. See CCS 9/1, 10 Feb. 1942.

79. CCS 23/1, 11 Feb. 1942.

80. CCS 24/1, 10 Feb. 1942.

81. CCS 19/1, 4 Feb. 1942. See also Stettinius, *op. cit.*, pp. 160-61.

82. AAFRH-6.

83. The British had made the original suggestion for the Secretariat in JCCSs-8. For a British criticism of American methods of keeping staff records, see an interview with Air Commodore A.C.H. Sharp by Dr. Bruce Hopper, London, 12 Oct. 1943.

84. Kent R. Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Organi-*

zation of Ground Combat Troops (*The United States Army in World War II: The Army Ground Forces*) (Washington, 1947), pp. 1-6. The author of the present chapter has borrowed heavily from this study of the War Department's Historical Division, and would like to express here his gratitude to the chief of that division for making available the proofs while the book was in press.

85. Quoted in same work, p. 17.
86. *Ibid.*, pp. 128-34.
87. *Ibid.*, pp. 99, 100.
88. AR 95-5, 20 June 1941, Army Air Forces, General Provisions, 3a, 4d, 5g.
89. AAF Historical Study No. 10, Organization of the Army Air Arm, 1935-43, pp. 19-21.
90. WD Press Release, 21 June 1941.
91. AR 95-5, 3a.
92. *Ibid.*, 3b.
93. *Ibid.*, 4a, 4b.
94. *Organization of Ground Combat Troops*, p. 134.
95. *Ibid.*, p. 135, quoting Arnold's memo of 18 Aug. 1941.
96. *Ibid.*, p. 138.
97. *Ibid.*, p. 139.
98. *Ibid.*, p. 143.
99. *Ibid.*, p. 144.
100. *Ibid.*, p. 148.
101. R&R, AC/AS, A-1 to C/AS, 10 Oct. 1941.
102. AAFHS-10, pp. 20-24.
103. *Ibid.*, p. 21.
104. Memo, C/AAF to C/S, 25 Nov. 1941.
105. WPD 4614, memo, AC/S, WPD to Sec. GS, 28 Nov. 1941.
106. AAFHS-10, pp. 23-26.
107. *Ibid.*, pp. 26-27.
108. *Organization of Ground Combat Troops*, pp. 150-51.
109. AAFHS-10, pp. 27-28.
110. *Time*, 9 Mar. 1942, p. 43.
111. *Report... Pearl Harbor Attack*, p. 43.
112. Outline of Lecture to be Given to WDGS Officers Training Group, n.d.

113. Promotions announced in *New York Times*, 16 Dec. 1941 and 20 Mar. 1943.

114. AAFHS-10, pp. 28-29.

115. Memo, Lt. Col. K.N. Walker to C/AS, 14 Oct. 1941, incl. draft proposal to C/S.

116. R&R, Authority for Air Staff to Confer with British Air Staff, 16 Dec. 1941.

117. Interview with Air Commodore Warburton by Dr. Bruce Hopper, London, 4 July 1944.

118. Memo from Maj. Gen. M.F. Harmon, C/AS, 10 June 1942.

NOTES TO CHAPTER 8

1. Fourth Air Force Historical Study I-1, Organization and Functions of the Fourth Air Force through the Year 1941, p. 242.
2. Richard L. Neuberger, "Reveille in the Northwest," *Nation*, 20 Dec. 1941, pp. 637-39.
3. Radio address by President Roosevelt, 9 Dec. 1941, reproduced in *Peace and War: U.S. Foreign Policy, 1931-1941*.
4. Minutes of the Joint Board, 8 Dec. 1941.
5. Memo for C/S from S/W Henry L. Stimson, 9 Dec. 1941.
6. Minutes of the Joint Board, 8 Dec. 1941.
7. *Ibid.*
8. Memo for C/S, Air Estimate of the Situation, 6:30 a.m., 8 Dec. 1941, in AFSHO files.
9. Lt. Col. O.A. Anderson, AWPDP, Air Forces Estimate of the Situation, 12 Dec. 1941.
10. For a typical example of pressure brought on the War Department for stronger defense forces, attention is directed to the voluminous correspondence in AAG files 321.9 and 381 on the Sault Ste Marie canal. (See ltr., Central Defense Command to C/S, 29 Mar. 1942, which called the canal "the most valuable parcel of real estate in the world.")

General Marshall was so disturbed about the "investigative complex" after Pearl Harbor that he twice called attention to it in War Council meetings. (See Minutes of Sec. of War's Conference [War Council], 16 Mar. 1942.)

11. "Since the Japanese attacks on the Pacific Fleet in Hawaii had uncovered the entire west coast of North America, the reinforcement of garrisons along the West Coast, Panama, Hawaii, and in Alaska was given first priority." *Biennial Report*, C/S to Sec. of War, July 1941-30 June 1943, p. 7.

12. History, Caribbean Air Force, May 1941-Mar. 1942, pp. 450, 467.

13. *Ibid.*, pp. 450, 464.

14. Minutes of Meeting in Gen. Arnold's Office, 9 Dec. 1941.

15. History, Caribbean Air Force, p. 456.

16. *Ibid.*, p. 458.

17. *Ibid.*, p. 554.

18. *Ibid.*, pp. 446-50.

19. Panama Canal Air Traffic Reg., 15 Dec. 1941.

20. History, Caribbean Air Force, pp. 446-50.

21. Minutes of the Joint Board, 10 Dec. 1941.

22. History, Caribbean Air Force, pp. 460-65.

23. *Ibid.*, pp. 440 ff.

24. For the general background see AAF Historical Study No. 4, Alaskan Air Defense and the Japanese Invasion of the Aleutians.

25. History, Eleventh Air Force, Aug. 1940-Sept. 1942, pp. 86-87.

26. For a summary of status, see ltr., Hq. Alaska Defense Command to CG WDC, 14 Jan. 1942.

27. Ltr., Lt. Col. Dale Gaffney, Ladd Field, Alaska to Col. E.W. Hill, OCAC, 20 Dec. 1941.

28. "Unless Alaska is provided with detector equipment...it is subject to possible and probable surprise attack." (Ltr., Lt. Gen. J.L. DeWitt, CG WDC to CG Field Forces, 27 Jan. 1942.)

29. Ltr., as cited in n. 27.

30. Buckner, quoted in History, Eleventh Air Force, pp. 86-87.

31. Col. E.W. Hill, Observations, on flight to Alaska, 6-14 Oct. 1941.

32. Ltr., Col. E.S. Davis to Lt. Col. E.S. Kiel, 5 Dec. 1941, quoted in History, Eleventh Air Force, pp. 84-85.

33. Radg., Marshall to DeWitt, 11 Dec. 1941, quoted in Fourth Air Force Historical Study I-1, p. 284.

34. The order became effective 24 December 1941. (History, First Air Force, I, Organizational Development, Northeast Air District and First Air Force, 19 Nov. 1940-31 Dec. 1943, p. 15.)

35. See History, Third Air Force, Defense Activities, 1941-44, p. 10.

36. Fourth Air Force Historical Study I-1, pp. 244-46.

37. Detailed account in Fourth Air Force Historical Study III-1, Defense Plans and Operations, 1941, pp. 153-65, 250.

38. For full treatment see Fourth Air Force Historical Study I-1, chap. ix, and Fourth Air Force Historical Study III-1, chap. vii.

39. History, 4th AA Command, Jan. 1942-July 1945, p. 87 *et passim*.

40. A-2 Daily Summary of War News, 8 Dec. 1941.

41. *Ibid.*

42. *Ibid.*, 8 and 9 Dec. 1941.

43. *San Francisco News*, 10 Dec. 1941.

44. *Ibid.*, 9 Dec. 1941. For a full discussion, see Fourth Air Force Historical Study III-1, pp. 296-97.

45. A-2 Daily Sum., 8 Dec. 1941.

46. *Ibid.*, 9 Dec. 1941.

47. Fourth Air Force Historical Study I-1, pp. 260-62.

48. *Ibid.*

49. Based on A-2 Daily Sum., 9 Dec. 1941, and *New York Times*, 10 Dec. 1941.

50. *New York Times*, 12 Feb. 1942.

51. *Ibid.*, 10 Dec. 1941.

52. A-2 Daily Sum., 9 Dec. 1941.

53. See the repeated warnings from Western Defense Command (in particu-

lar from Maj. Gen. J.E. Fickel, CG Fourth Air Force), in Fourth Air Force Historical Study I-1, chap. ix; and Study I-2 (1942-45), chap. ii.

54. Fourth Air Force Historical Study III-1, chap. vii (especially pp. 232 ff.).

55. *Ibid.*

56. Fourth Air Force Historical Study I-1, p. 270.

57. Along the West Coast in February 1942 there was "little probability that the air force units as now constituted could defend the vital targets against a determined carrier based attack." (Memo for C/AAF from AWPD [Col. George], 2 Feb. 1942.)

58. *New York Times*, 12 Feb. 1942; Notes on U.S.-British Chiefs of Staff Conference, 24 Dec. 1941, in AFSHO files.

59. *New York Times*, 12 Feb. 1942.

60. "The relief of Aruba and Curacao, subject to Dutch concurrence, is to be completed before the end of January." (ABC-4/6.)

61. *New York Times*, 12 Feb. 1942; History, Caribbean Air Force, May 1941-Mar. 1942, p. 512. The exact date of the arrival of air units is not known, as the latter source gives dates of 14 and 17 January (compare p. 572 with p. 512, in this regard).

62. A-2 Daily Sum., 31 Jan. 1942.

63. *New York Times*, 12 Feb. 1942.

64. *Ibid.*, 17 and 18 Feb. 1942; History, Caribbean Air Force, Vol. III (A-3 Periodic Report, 16-28 Feb. 1942). See also History, Sixth Air Force, Mar. 1942-May 1943, pp. 119-22.

65. *New York Times*, 20 Feb. 1942. There is a possibility that the damage to shore installations on 19 February was caused by star shells fired by the USS *Winslow*. (See A-3 Periodic Report, as cited in n. 64.)

66. A-2 Daily Sum., 2 Mar. 1942.

67. *New York Times*, 20 Apr. 1942.

68. *Ibid.*, 18 Feb. 1942.

69. *Ibid.*, 20 Feb. 1942.

70. *Ibid.*

71. *Los Angeles Times*, 24 Feb. 1942. The submarine was the I-17, which was sunk south of New Caledonia on 19 August 1943. Interrogation of surviving crewmen at that time placed the submarine off San Diego on 10 February 1942 and indicated that it fired twenty-four or twenty-five shells onto the coast near Santa Barbara on 23 February. After further operations off the California coast, it returned to Japan in March. (USAFISPA G-2 Periodic Report No. 39 [2-9 Oct. 1943].)

72. For details see A-2 Daily Sum., 23 and 24 Feb. 1942; and History, 4th AA Command, Jan. 1942-July 1945, pp. 113-14.

73. Fourth Air Force Historical Study III-2, Defense Plans and Operations (1942-45), p. 30.

74. A-2 Daily Sum., 24 Feb. 1942.

75. *Los Angeles Times*, 25 Feb. 1942.

76. History, 4th AA Command, Jan. 1942-July 1945, p. 116.

77. Fourth Air Force Historical Study III-2, p. 31.

78. History, 4th AA Command, pp. 116-18; A-2 Daily Sum., 24 and 25 Feb. 1942. See also *Los Angeles Times*, 25 Feb. 1942.

79. Contemporary observations are summarized in History, 4th AA Command, pp. 119-20.

80. Report from WDC, 25 Feb. 1942, in A-2 Daily Sum.

81. *Los Angeles Times*, 25 and 26 Feb. 1942.

82. *New York Times*, 26 Feb. 1942, reporting conference of previous day.

83. WDC report received in Washington at 1315 hours, 25 Feb. 1942, quoted in A-2 Daily Sum., 25 Feb. 1942.

84. History, 4th AA Command, pp. 119-20.

85. Report from WDC, 26 Feb. 1942, quoted in A-2 Daily Sum.

86. *Los Angeles Times*, 27 Feb. 1942.

87. *Ibid.*

88. *Ibid.*

89. Quoted in *Los Angeles Times*, 28 Feb. 1942.

90. Editorial, *New York Times*, 28 Feb. 1942.

91. *Los Angeles Times*, 1 Nov. 1945; *Oakland Tribune*, 2 Nov. 1945, quoted in Fourth Air Force Historical Study III-2, p. 32. It should be noted, however, that the I-17 which shelled oil installations near Santa Barbara on the night of 23 February normally carried a plane. (See USAFISPA G-2 Periodic Report No. 39 [2-9 Oct. 1943].)

92. USSBS (Pacific), Interrogation 97, Comdr. Masatake Okumiya, at Tokyo, 10 Oct. 1945.

93. History, 4th AA Command, p. 119.

94. *Ibid.*, p. 121.

95. *Ibid.*, p. 119.

96. *Los Angeles Times*: Bill Henry on 26 Feb. 1942; Ernie Pyle on 5 Mar. 1942.

97. Richard L. Neuberger, "Reveille in the Northwest," *Nation*, 20 Dec. 1941.

98. Notes on Orientation Concerning Controlled Interception, in docs. for History, Fighter Command School, Mar.-Nov. 1942.

99. *Ibid.*

100. History, AAF Proving Ground Command, Pt. 16, Radar, chap. i.

101. AAF Historical Study No. 58, The Use of Radio and Radar Equipment by the AAF, 1939-45, chap. ii, quoting Radar, A Report on Science at War, a press release by the Joint Board on Scientific Information Policy, 14 Aug. 1945.

102. Notes on Interception, as cited in n. 98.

103. Edgar McInnis, *The War: Second Year*, pp. 6 ff.

104. *Ibid.*, pp. 218 ff.

105. Characteristics of British Radar Equipment, in docs. for History, Fighter Command School, Mar.-Nov. 1942.

106. *Ibid.*

107. See p. 6 of Notes on Interception, as cited in n. 98; cf. AAFHS-58, chap. iii.

108. Maj. Gordon P. Saville, Air Defense Doctrine, 27 Oct. 1941. See n. 118, this chapter.

109. AAF Historical Study No. 66, Development of Radio and Radar Equipment for Air Operations, 1939-44.

110. See "Radar-A Most Decisive Instrument," *U.S. Air Services*, Mar. 1946, p. 21.

111. Brig. Gen. H.H. McClelland said: "We simply did not have the funds or manpower in our military communications set-up to fool" with radar. (AAFHS-66.)

112. *Ibid.*

113. Memo for C/S from Arnold, 24 Nov. 1939.

114. History, Air Defense Command, p. 7.

115. AAFHS-66.

116. *Ibid.*

117. AG 320.2 (2-16-41) M-C-M, Air Defense, 7 Mar. 1941, Doc. 1, in Fourth Air Force Historical Study III-1.

118. The plan of air defense was officially summarized in the manual Air Defense Doctrine, as cited in n. 108.

119. For limitations of radar, see p. 23, Report by R. A. Watson-Watt on the Air Defense System of the Pacific Coast of the U.S., Jan. 1942, Doc. 40, in Fourth Air Force Historical Study III-1.

120. *Ibid.*, p. 21.

121. History, 1 Fighter Command, 1941-44, I, 104 ff.

122. Fourth Air Force Historical Study III-2, pp. 146 ff.

123. History, 1 Fighter Command, 1941-44, I, 67; Fourth Air Force Historical Study III-2, p. 74.

124. Air Defense Doctrine.

125. *Ibid.*

126. See p. 3 of Watson-Watt report, as cited in n. 119.

127. Ltr., Air Marshal A.T. Harris, RAF Delegation, Washington, D.C. to Hon. R.A. Lovett, AS/W for Air, 12 Dec. 1941.

128. *Ibid.*

129. All quotes are from Watson-Watt report.

130. Memo for Arnold from Saville, 30 Jan. 1942; ltr., C/AAF to CSigO, 8 Feb. 1942.

131. Memo for Arnold from Saville, 31 Jan. 1942.

132. 1st ind. (ltr., C/AAF to CSigO, 8 Feb. 1942), OCSigO to C/AAF, 11 Feb. 1942.

133. Memo for C/AAF from AWPDP (Col. George), 2 Feb. 1942.

134. Ltr., CG I Interceptor Command to CG First Air Force, 18 Feb. 1942.

135. Memo for Arnold from Eisenhower (WD OPD), 15 Apr. 1942.

136. For a detailed account of establishment of a VHF net, see Fourth Air Force Historical Study III-2, pp. 234-50.

137. "Longhairs and Short Waves," *Fortune*, Nov. 1945.

138. *Ibid.*

139. AG 371 (12-19-41) MSC-E-M, Creation of Eastern Theater of Operations, 20 Dec. 1941. See also GO 1, Eastern Theater of Operations, 21 Dec. 1941, Doc. 10, in History, First Air Force, Vol. I.

140. AG 320.2 (12-30-41) MSC-C-M, Allocation of AAF Units and Associated Services, and the Assignment of Air Bases and Observation Airdromes may be found as Doc. 1, in Fourth Air Force Historical Study I-2, or as Doc. 11, in History, First Air Force, Vol. I.

141. See Fourth Air Force Historical Study I-2, pp. 208 ff.

142. AG 381 (3-11-42) MC-E-M, Defense of Continental U.S., 18 Mar. 1942.

143. For the initial organization of AAF, see AAF Reg. 20-1, 31 Mar. 1942.

144. History, Fighter Command School, Mar.-Nov. 1942, pp. 24 ff.

145. On the effects that dispersion would have had, see History, Third Air Force, to June 1944, pp. 135-37.

146. Fourth Air Force Historical Study III-2, chap. i.

147. Fourth Air Force Historical Study III-2, chap. iii.

148. *Ibid.*, pp. 199 ff.

149. *Ibid.*, pp. 25 ff.

150. 22d Recommendation of Permanent Joint Board on Defense, as sum-

marized in ltr., TAG to C/AAF and others, 1 Feb. 1942.

151. Quoted on title page of National Service Handbook, Committee on Public Information (Washington, 1917).

152. See p. 22 of Watson-Watt report, as cited in n. 119.

153. See Fourth Air Force Historical Study III-2, chap. ii.

154. *New York Times*, 20 Apr. 1942.

155. Minutes of S/W Conference, 18 May 1942.

156. *Ibid.*

157. *Ibid.*, meeting of 25 May 1942.

158. Fourth Air Force Historical Study I-2, p. 61.

159. Minutes of S/W Conference, 8 June 1942. See also Fourth Air Force Historical Study I-2, p. 62.

160. AAF Historical Study No. 42, Air Defense of the Panama Canal, 1 Jan. 1939-7 Dec. 1941.

161. No complete transcript of the report by Watson-Watt was available, but a digest, with many direct quotations, is in History, Sixth Air Force, Mar. 1942-May 1943, pp. 26 ff.

162. Memo for Roosevelt from Stimson, 14 Mar. 1942.

163. *Ibid.*

164. History, Sixth Air Force, p. 219.

165. Memo for Arnold from Eisenhower (OPD), received at AAF Hq., 29 Apr. 1942.

166. History, Sixth Air Force, pp. 194-97.

167. Minutes of S/W Conference, 29 June 1942. General Arnold announced that "we are equipping [bombers] with ASV at the rate of two per day."

168. Watson-Watt report, as quoted in History, Sixth Air Force, pp. 26 ff.

169. *Ibid.*

170. AAF Historical Study No. 4, Alaskan Air Defense and the Japanese Invasion of the Aleutians, pp. 22-27.

171. *Ibid.*, p. 28.

172. The reinforcement preparations are described in Fourth Air Force Historical Study IV-2, Processing Functions

and Relations with Alaska, 1942-45, chap. i.

173. *Ibid.*

174. Minutes of the Joint Board, 26 Nov. 1941.

175. History, Eleventh Air Force, Aug. 1940-Sept. 1942, p. 89.

176. *Ibid.*, pp. 90 ff.

177. History, Fort Glenn Army Air Base, Aug. 1941-July 1944, pp. 1-8.

178. History, Eleventh Air Force, pp. 91 ff.

179. *Ibid.*, pp. 118, 128-29, 132, 134-35, 141; AAFHS-4, pp. 50-51.

180. Memo for Chief, Radar Div. from Maj. E.J. Atkinson, 26 Aug. 1942.

181. Memo for Dir. of Mil. Requirements from Col. G.P. Saville, 1 Sept. 1942.

182. Ltrs., Hq. WDC to CG Field Forces, 27 and 28 Jan. 1942.

183. R&R, Col. G.P. Saville to AWPd, 25 Feb. 1942; 2d ind. (basic unknown), Hq. AAF to Chief of Engineers, 14 Apr. 1942, both in AAG 676-A, Alaska.

184. Memo for CG AAF from Brig. Gen. Wm. O. Butler, CG Eleventh Air Force, 16 June 1942.

185. History, Eleventh Air Force, p. 116.

NOTES TO CHAPTER 9

1. Maj. Oliver LaFarge, "Strategic Air Supply," *Air Transport*, II (Sept. 1944), 20-25.

2. JCCS-1, Annex 1.

3. See chapters on early operations over the various routes in History, Ferrying Command Operations, 7 Dec. 1941-30 June 1942.

4. Ministry of Information, *Atlantic Bridge, The Official Account of R.A.F. Transport Command's Ocean Ferry* (London, 1945), pp. 5-19; Summary of Information covering the organization of the Atlantic ferry bomber service by the Canadian Pacific, 25 Mar. 1942, incl. with ltr., C.H. Dickens, Canadian Pacific Air Lines, Ltd., to Lt. Col. Fred C. Morgan,

21 Mar. 1944. The transoceanic ferrying of aircraft for the British was first undertaken by the Canadian Pacific Railway's Air Services Department, under contract with the British Ministry of Aircraft Production. The first delivery by the Air Services Department was completed on 11 November 1940. In the spring of 1941 it was determined to transfer direct control of the operation to the Ministry of Aircraft Production. ATFERO, the agency of the ministry for this job, actually assumed control as early as March 1941, although the official notice to the Canadian Pacific of the proposed cancellation of that organization's contract was not sent until 27 May 1941. The formal transfer was made on 15 July. On 1 August 1941 the RAF Ferry Command, organized in July, in turn took over the operation from ATFERO.

5. Memo for Gen. Arnold from Maj. E.H. Alexander, 21 Mar. 1941; report of conference in office of Mr. Lovett, 14 Apr. 1941, in AAG 353; memo for Gen. Brett from H.T. Lewis and O.W. Coyle, 15 Apr. 1941; History, Ferrying Command Operations, 29 May-7 Dec. 1941, p. 17.

6. CM-IN, London to TAG (Arnold for Lovett), #1051, 21 Apr. 1941.

7. Ltr., Air Marshal H.C.T. Dowding to AS/W Robert A. Lovett, 28 Apr. 1941; ltr., British Minister Sir Gerald Campbell to Sec. of State, 8 May 1941; memo for C/AC from US/W Robert P. Patterson, 12 May 1941.

8. Memo for Gen. Spaatz from Gen. Arnold, 26 May 1941; memo for Gen. Arnold from Gen. Spaatz, 27 May 1941.

9. Ltr., President to S/W, 28 May 1941.

10. Administrative History, Ferrying Command, 29 May 1941-20 June 1942, pp. 9-10.

11. Ltr., TAG to CG's All Armies *et al.*, 5 June 1941.

12. When the Ferrying Command was established the term "ferrying" was used in a broad sense to include both the flight delivery of aircraft and the operation of a back-and-forth service for the transportation of cargo and passengers. In time the term came to mean only the former type of operation in

accordance with British usage, while the latter—which is true ferrying—became known as air transport or air transportation.

13. R&R, Gen. Arnold to Gen. Brett, 3 Apr. 1941; memo for AS/W from Gen. Brett, 25 Apr. 1941; memo for DC/S for Air from Col. G.E. Stratemyer, 16 May 1941; memo for DC/S for Air from OCAC, 29 May 1941.

14. Administrative History, Ferrying Command, 29 May 1941–30 June 1942, pp. 27–30; History, FC Operations, 29 May–7 Dec. 1941, pp. 18, 33–34.

15. History, FC Operations, 29 May–7 Dec. 1941, pp. 29–32. See especially Table I, p. 30.

16. *Ibid.*, p. 32.

17. See source cited in n. 11; Administrative History, Ferrying Command, 29 May 1941–30 June 1942, pp. 10–12.

18. *Ibid.*, pp. 30–35; History, FC Operations, 29 May–7 Dec. 1941, pp. 46–57; Pilot's Report, Trip #1; CoPilot's Report, Trip #1; memo for C/AAF from AC Ferrying Command, 23 Oct. 1941.

19. Report, Capt. Elliott Roosevelt, 21st Recon. Sq. to TAG, 8 Sept. 1941; memo for Col. Olds from Capt. J.H. Rothrock, 6 Sept. 1941.

20. Flight Report, Trip #14, Special Mission #1, 13 Sept.–30 Oct. 1941.

21. Pilot's Report, Trip #15, Special Mission #2; History, FC Operations, 29 May–7 Dec. 1941, pp. 65–68.

22. E.R. Stettinius, Jr., *Lend-Lease, Weapon for Victory*, p. 93.

23. Distances given, expressed in round numbers, are taken from route maps in various pilot handbooks published by AAF Aeronautical Chart Service.

24. History, South Atlantic Div., Pt. 2 (May–Nov. 1942), pp. 56–63.

25. R&R, C/AS to OCAC Intel., 21 Oct. 1941; R&R, OCAC Intel. to ACFC, 29 Oct. 1941; History, South Atlantic Div., Pt. 1, pp. 128–30.

26. U.S. Dept. of State, *Leased Naval and Air Bases: Agreement and Exchanges of Notes Between the United States of America and Great Britain and Protocol*

Between the United States of America, Great Britain, and Canada Concerning the Defense of Newfoundland, Signed March 27, 1941, Exec. Agreement Series 235 (Washington, 1942).

27. Memo for Comdr. D.W. Tomlinson from Gen. Arnold, 13 May 1941.

28. Air Transport Command in Central Africa and the Middle East, Pt. 1 (29 May 1941–30 June 1942), pp. 5–18; AAF Reference History No. 8, *The AAF in the Middle East: A Study of the Origins of the Ninth Air Force*, pp. 10–15; Stettinius, *Lend-Lease*, pp. 146–48.

29. Memo for Chiefs of All Divs. from Col. G.E. Stratemyer, 12 May 1941; memo for Comdr. Tomlinson from Gen. Arnold, 13 May 1941; ltr., Maj. E.R. Quesada to Mr. Dean G. Acheson, Asst. Sec. of State, 13 May 1941.

30. Memo for Comdr. Tomlinson from Gen. Arnold, 13 May 1941; memo for Gen. Brett from Comdr. Tomlinson, 15 May 1941; memos for record, G.E.S. [Col. G.E. Stratemyer], 14, 15, 16 May 1941, in AAG 373.2A.

31. Memo for record, G.E.S., 23 May 1941; memo for C/S from Gen. Arnold, 24 May 1941; CM–OUT, Arnold to Military Attaché, London, 24 May 1941; R&R, Exec. OCAC to Col. Ferson, 25 May 1941; ltr., Gen. Arnold to Mr. Juan Trippe, 27 May 1941; all the above in AAG 373.2A.

32. William A.M. Burden, *The Struggle for Airways in Latin America* (New York, 1943), pp. 23, 26–35, 54–60; Oliver J. Lissitzyn, *International Air Transport and National Policy*, Studies in American Foreign Relations No. 3 (New York, 1942), pp. 310, 352; Matthew Josephson, *Empire of the Air, Juan Trippe and the Struggle for World Airways* (New York, 1943), pp. 30–31, 61–76, 149–62. A useful summary of the development of commercial aviation in South America is given in History, South Atlantic Div., Pt. 1, pp. 55–69.

33. Contract between U.S.A. and Pan American Airports Corp., 2 Nov. 1940; A Consolidated Brief of the Agreements and Contracts Constituting the Airport Development Program (ADP), in ATC Plans Div. files; History, South Atlantic

Div., Pt. 1, pp. 75-87; History, Caribbean Div., Pt. 1, pp. 7-11.

34. Draft of Agreement between Atlantic Airways, Ltd., and British Govt., 29 May 1941, incl. with memo for Gen. Arnold from George H. Murphy, 29 May 1941.

35. R&R, Exec. OCAC to Col. Ferson, 25 May 1941; Pan American Air Ferries, Inc., 1941-42, in ATC Hist. file.

36. Pan American Air Ferries, Inc., 1941-42; PAAF Operations Report, Sept. 1941-31 Oct. 1942. These and similar reports prepared by Pan American Air Ferries also cover the operations of Atlantic Airways. (See also History, Caribbean Div., Pt. 1, pp. 19-29; History, FC Operations, 29 May-7 Dec. 1941, pp. 81-87.)

37. Memo for C/S from C/AS, 6 Aug. 1941.

38. Atlantic Airways, Ltd., Current Consolidated Airplane Report.

39. Memo for Gen. Arnold from Lt. Col. Clayton Bissell, 26 June 1941.

40. Ltr., Air Commodore E.B.C. Betts to Gen. Spaatz, 16 Oct. 1941.

41. Memo for Gen. Arnold from Lt. Col. Bissell, 26 June 1941.

42. Memo for US/W from AAF, n.s., 17 July 1941; memo for the President from Acting S/W Robert P. Patterson, 17 July 1941; memo to C/AAF from S/W, 12 Aug. 1941; memo for C/AAF from Maj. E.F. Gillespie, 20 Aug. 1941.

43. Memo for C/AAF from Maj. Gillespie, 20 Aug. 1941; memo for Gen. Brett from Maj. Gillespie, 22 Aug. 1941.

44. Contract W 535 ac-21207 USA and PAA Co., Inc., 12 Aug. 1941; contract DA W 535 ac-415, USA, PAA, Inc., and PAA-Africa, Ltd., 12 Aug. 1941; contract DA W 535 ac-416, USA, PAA, Inc., PAAF, Inc., and PAA-Africa, Ltd., 12 Aug. 1941.

45. Agreement between British Govt. and PAA-Africa, Ltd., 12 Aug. 1941; agreement between British Govt. and PAAF, Inc., 12 Aug. 1941.

46. *New York Times*, 19 Aug. 1941, p. 4.

47. Pan American Air Ferries reports on operations, flight training, and mechanical training; History, Caribbean Div., Pt. 1, pp. 29-42; History, FC Operations, 29 May-7 Dec. 1941, pp. 92-94.

48. Pan American Air Ferries, Inc., Current Consolidated Airplane Reports.

49. *Ibid.*; Foreign Ferrying Deliveries, Jan. through June 1942, and Foreign Ferrying Deliveries, July through Dec. 1942, compiled by ATC Historical Br.

50. Contract W 535 ac-21207, 12 Aug. 1941; History, FC Operations, 29 May-7 Dec. 1941, pp. 115-21.

51. Leonard Bridgman, comp. and ed., *Jane's All the World's Aircraft, 1942* (New York, 1943), pp. 150 e-151 c.

52. Operations, Pan American Airways' Proving Flight, New York-to-Leopoldville, November 10th to 26th, 1941, in ATC 373-5.

53. History, FC Operations, 7 Dec. 1941-30 June 1942, pp. 188-92, 195-98.

54. *Ibid.*; contract DA W 535 ac-415, 12 Aug. 1941.

55. Don Wharton, "Our New Life Line to the East," *Saturday Evening Post*, 1 Aug. 1941, pp. 19, 65-66; Stettinius, *Lend-Lease*, pp. 148-49; AAFRH-8, pp. 14-15; History, ATC in Central Africa and the Middle East, Pt. 1, pp. 38-39, 52-55; History, FC Operations, 29 May-7 Dec. 1941, pp. 127-29.

56. AAFRH-8.

57. R&R, ACFC to C/AC, 22 July 1941; ACFC Daily Diary, 23 July 1941.

58. R&R, ACFC to C/AWPD, 21 Oct. 1941; Comment 3 (R&R, ACFC to C/AC, 24 Oct. 1941), AWPD to C/AAF, 7 Nov. 1941, and Comment 5, OCAC Intel. to C/AS, 18 Nov. 1941; R&R, ACFC to Chief Intel. Div., 26 Nov. 1941; memo, Col. Robert M. Love for CG AAF, 16 Dec. 1943.

59. Pilot's Report, South Atlantic Trip #1; ACFC Daily Diary, 30 Aug.-7 Oct. 1941.

60. Pilot's Report, Trip #15, Special Mission #2.

61. Memo for C/AC from Col. Ray A. Dunn, 4 Nov. 1941.

62. Pilot's Report, South Atlantic Trip #2.

63. Pilots' Reports, South Atlantic Trips #3-6.

64. CM-IN, MA Cairo to MILID (Brett for Arnold), #105, 29 Sept. 1941.

65. CM-IN, London (Brett) to AGWAR, #752, 17 Oct. 1941; CM-OUT, Arnold to Brett, 18 [?] Oct. 1941.

66. History, FC Operations, 29 May-7 Dec. 1941, pp. 95-105; The Sixteen Liberators, in ATC Hist. file.

67. The Sixteen Liberators.

68. Ltr., President to S/W, 3 Oct. 1941.

69. Ltr., President to S/W, 29 Oct. 1941.

70. Ltr., President to S/W, 24 Nov. 1941.

71. See sources in n. 66.

72. Pilots' Reports, South Atlantic Trips #DA-2 to DA-5.

73. History, FC Operations, 7 Dec. 1941-30 June 1942, pp. 82-84.

74. *Ibid.*, pp. 79-81.

75. *Ibid.*, p. 84.

76. ACFC Daily Diary, 30 Jan. 1942; memo for C/S from AAF, 3 Feb. 1942; ltr., Air Marshal D.C.S. Evill to Gen. Arnold, 5 Feb. 1942; ltr., AAF to C/AC, 13 Feb. 1942; ltr., Evill to Arnold, 16 Feb. 1942; ltr., AAF to C/Engrs. and CG ACFC, 20 Feb. 1942; History, FC Operations, 7 Dec. 1941-30 June 1942, pp. 84-86.

77. Ltr., Lt. Col. Neil B. Harding *et al.*, to CG ACFC, 14 Mar. 1942.

78. Report on Reconnaissance of Additional Air Routes to Australia, 10 Feb.-3 Apr. 1942, in ATC A-2 library.

79. History, FC Operations, 7 Dec. 1941-30 June 1942, pp. 85-86, and docs. cited in notes 19-20, p. 86.

80. The prewar movement of heavy bombers to the Philippines and the construction of the alternate Pacific route are described in the following studies: AAF Reference History No. 11, Army Air Action in the Philippines and Netherlands East Indies, 1941-42, pp. 12-29; AAF Historical Study No. 45, De-

velopment of the South Pacific Air Route.

81. As early as 1939 plans had been developed for the use of the South Atlantic route in ferrying bombers to the Philippines. (Memo for C/AC from C/Plans Div., 23 Aug. 1939. See also memo for C/AAF from AWPd, 27 July 1941, and memo, AAF Intel. Div., 27 July 1941, both in AAG 452.1.)

82. For President's orders see ltr., C/AAF to CG AFCC, 13 Dec. 1941, incl. with R&R, OCAC, Opns. Div. to C/Mat. Div., 15 Dec. 1941.

83. Ltr., TAG to CG AFCC, 19 Dec. 1941; ltr., TAG to CG AFCC, 23 Dec. 1941.

84. History, FC Operations, pp. 102, 134; Foreign Ferrying Deliveries, Jan. through June 1942, in ATC Hist. file.

85. Ltr., TAG to CG AFCC, 19 Dec. 1941.

86. Ltr., TAG to CG AFCC, 23 Dec. 1941.

87. Ltr., 2d Lt. Leonard P. Cohen, Karachi to CO ACFC, 10 Jan. 1942.

88. Ltr., TAG to CG AFCC, 6 Jan. 1942.

89. History, FC Operations, p. 80.

90. Interview with Lt. Col. Louis T. Reichers by Maj. Oliver LaFarge, 28 Mar. 1944; History, Caribbean Div., Pt. 1, pp. 70-73.

91. History, Caribbean Div., Pt. 1, pp. 73-78; History, FC Operations, pp. 95-97.

92. Lt. Col. Karl Truesdell, Jr., Summary of Remarks and Recommendations re Air Corps Combat Command Ferry Project to X, in ATC 373.5; unrecorded interview with Col. Horace M. Wade, DC/S, ATC by John D. Carter, 19 Sept. 1946. Col. Wade, then a first lieutenant, piloted one of the LB-30's of Project X to the Far East. The LB-30 crew members are listed in ltr., TAG to CG AFCC, 19 Dec. 1941.

93. Memo for W/C A.A. Adams from Col. Robert Olds, 22 Dec. 1941; CM-IN, Cairo (Fellers) to TAG, #448 Amseg, 29 Dec. 1941; R&R, ACFC to OCAC Mat. Div., 30 Dec. 1941; R&R,

ACFC to Opns. Div., 3 Jan. 1942; CM-IN, Cairo (Fellers) to TAG (Adler for Arnold), #754 Amseg, 3 Feb. 1942; History, FC Operations, pp. 99-100.

94. History, FC Operations, pp. 100-101, and docs. cited in n. 9, p. 101.

95. Memo for Gen. Harmon from Col. George McCoy, Jr., 28 May 1942.

96. Foreign Ferrying Deliveries, Jan.-June 1942 and July-Dec. 1942; History, FC Operations, pp. 133-42.

97. History, FC Operations, pp. 78-79, 105-6; History, Caribbean Div., Pt. 2, pp. 1-36, 55-60.

98. Stettinius, *Lend-Lease*, pp. 154-56.

99. History, FC Operations, pp. 107-8.

100. R&R, Asst. for Opns. to ACFC, 12 Feb. 1942; ltr., Gen. Olds to Pan American Airways, Inc., *et al.*, 19 Feb. 1942.

101. History, FC Operations, p. 108.

102. Foreign Ferrying Deliveries, as cited in n. 96; PAAF Current Consolidated Airplane Report.

103. AAFRH-8, p. 61.

104. Foreign Ferrying Deliveries, July-Dec. 1942; ltr., Col. C.R. Smith to Exec. Munitions Assignments Board, 11 June 1942.

105. Ltrs., AAF to C/AC, 9 and 19 Jan. 1942; docs. cited in History, FC Operations, n. 11, p. 113, and n. 22, p. 122.

106. History, FC Operations, pp. 112-17; interview with Lt. Col. W.R. Stark by Mrs. M.G. Radsch, 10 Apr. 1946.

107. History, FC Operations, pp. 121-22; Foreign Ferrying Deliveries, Jan.-June 1942.

108. History, FC Operations, pp. 122-25; ltr., Lt. Col. John E. Barr to CG Tenth Air Force, 19 June 1942; Foreign Ferrying Deliveries, Jan.-June 1942 and July-Dec. 1942.

109. Foreign Ferrying Deliveries, as in n. 108.

110. History, FC Operations, pp. 109-12; AAFRH-8, pp. 69-75, 85, 96-113.

111. Ltr., Sec. of State to S/W, 1 Feb. 1941; memo for Gen. Arnold from Maj. E.H. Alexander, 21 Mar. 1941; memo for Gen. Arnold from H.T.

Lewis, O.W. Coyle, and Maj. E.H. Alexander, 24 Mar. 1941; *Atlantic Bridge*, pp. 26-27; History, North Atlantic Div., ATC, I, Pt. 1, 68-71.

112. Memo for Gen. Spaatz from Capt. T.N. Charles, 13 Mar. 1941; memo for C/S from Gen. Brett, 12 Apr. 1941; memo for C/S from Acting AC/S, WPD, 3 June 1941; memo for C/AC from Col. Robert Olds, 23 June 1941; memo for TAG from Acting AC/S, WPD, 10 July 1941; memo for AWPDP from Gen. Spaatz, 26 Aug. 1941; memo for C/S from AAF, 23 Sept. 1941.

113. Ltr., Sec. of State to S/W, 1 Feb. 1941; memo for Gen. Arnold from Maj. E.H. Alexander, 21 Mar. 1941.

114. Memo for Gen. Arnold from Maj. E.H. Alexander, 21 Mar. 1941.

115. History, North Atlantic Div., I, Pt. 1, 85-86.

116. *Ibid.*, 85-89; ltr., Capt. Elliott Roosevelt to TAG, 6 July 1941; *Atlantic Bridge*, pp. 27-29.

117. Ltr., Sec. of State Cordell Hull to Danish Minister Henrik de Kauffman, 7 Apr. 1941; ltr., Kauffman to Hull, 9 Apr. 1941; *Peace and War: U.S. Foreign Policy, 1931-1941*, pp. 103-4.

118. Memos for C/S from Acting AC/S, WPD, 3 and 10 June 1941; ltr., TAG to C/S, 10 July 1941; History, North Atlantic Div., I, Pt. 1, 103.

119. History, North Atlantic Div., I, Pt. 1, 104.

120. Ltr., AAF to Capt. Elliott Roosevelt, 11 Aug. 1941; ltr., Capt. Elliott Roosevelt to TAG, 8 Sept. 1941; memo for Col. Olds from Capt. J.H. Rothrock, 6 Sept. 1941.

121. History, North Atlantic Div., I, Pt. 1, 105-6.

122. *Ibid.*, 100-101.

123. *Ibid.*, 107-13; ltr., Capt. Elliott Roosevelt to TAG, 8 Sept. 1941.

124. History, North Atlantic Div., I, Pt. 1, 12-15, 78-83, 113-16.

125. *Ibid.*, 397-401, 405-6; History, 8th Weather Sq. in Greenland, pp. 1-2; memo for C/AC from Col. Robert Olds, 24 Nov. 1941.

126. History, North Atlantic Div., I, Pt. 1, 93, 401-2.

127. History, 8th Weather Sq. in Greenland, pp. 2-7.

128. *Ibid.*, pp. 8, 10.

129. Ltr., Capt. Elliott Roosevelt to TAG, 15 July 1941; memo for C/S from Gen. Arnold, 28 July 1941; ltr., Capt. Elliott Roosevelt to TAG, 3 Aug. 1941 (Report #3); ltr., Capt. Elliott Roosevelt to TAG, 3 Aug. 1941 (Report #4).

130. History, North Atlantic Div., I, Pt. 1, 131-33, 410-12.

131. *Ibid.*, 85-91; ltr., Lt. Col. J.K. Gerhart, Inspecting Officer, to CG Eighth Air Force, 1 June 1942, and 3d ind., Lt. Col. Robert M. Love to Dir. of Air Base Services, 2 July 1942; memo for CG AAF from Brig. Gen. H.L. George, 3 June 1942.

132. History, North Atlantic Div., I, Pt. 1, 103-16; Annex #4, Opns. Orders #7-A, Hq. VIII Fighter Command, 18 June 1942.

133. History, North Atlantic Div., I, Pt. 1, 486-591.

134. *Ibid.*, 22, 86-88, 290-94.

135. *Ibid.*, 294-303, 318; contract DA W 535 ac-1476, 31 Jan. 1942; ltr., Lt. Col. Robert M. Love to Northeast Airlines, 3 Feb. 1942; Chronology of Inaugural Routes and Flights, North Atlantic Div., 15 Feb. 1945.

136. History, North Atlantic Div., I, Pt. 1, 311-15; contract DA W 535 ac-1062, 24 Dec. 1941, and directive No. 9 thereto, 4 Apr. 1942; Pilot's Report, TWA Survey Trip, 13-24 Apr. 1942; memo to Col. Mosley from M/Sgt. Joseph H. Walsh, 8 May 1942.

137. American Airlines Survey Flight, North Atlantic Route, 24 Apr.-9 May 1942, incl. to ltr., Lt. Col. Robert J. Smith to Capt. Crocker Snow, 3 June 1942.

138. History, North Atlantic Div., I, Pt. 1, 323-24, 332-34.

139. *Ibid.*, 192-94, 196-200; R&R, Gen. Arnold to ACFC, 26 Mar. 1942; ltr., Gen. Arnold to Lt. Col. Milton W. Arnold, 9 May 1942; ltr., Col. Milton W. Arnold to CG ATC, 6 Aug. 1943.

140. Ltr., Col. Milton W. Arnold to CG ATC, 6 Aug. 1943.

141. *Ibid.*

142. Ltr., Maj. Gen. Carl Spaatz to CG VIII Fighter Command, 7 May 1942; ltr., Col. Charles A. Hoek, Acting Dir. of War Organization & Movement, to CG Eighth Air Force *et al.*, 17 May 1942.

143. Memo for CG AAF from Brig. Gen. H.L. George, 3 June 1942.

144. R&R, Maj. Gen. H.L. George to AFACT, 18 Sept. 1942; ltr., Col. Milton W. Arnold to CG ATC, 6 Aug. 1943.

145. History, North Atlantic Div., I, Pt. 1, 41-42, 440-41; ltr., Col. C.R. Smith to CG 23d Ferrying Wing, 19 June 1942; directive memo for CG ATC from Maj. Gen. M.F. Harmon, C/AS, 22 June 1942.

146. Memo for C/AC from Col. Olds, 4 Dec. 1941; ACFC Daily Diary, 9, 10 Dec. 1941; minutes of meeting in Gen. Arnold's office, 9 Dec. 1941, in ATC 337; History, FC Operations, pp. 3-5, 183-88.

147. For an excellent discussion of the basic advantages of initially using the airlines, see ltr., Gen. George to CG AAF, 26 Apr. 1944. See also History, FC Operations, pp. 8, 188-92; Reginald M. Cleveland, *Air Transport at War* (New York, 1946), pp. 42-56.

148. Cleveland, *Air Transport at War*, pp. 14-20.

149. History, FC Operations, pp. 222-23.

150. Executive Order #8974, 13 Dec. 1941.

151. Minutes of meeting of Special Aviation Committee, 14 Dec. 1941, in ATC Hist. file.

152. These figures were supplied by the Civil Aeronautics Board, 20 Jan. 1947, and include all aircraft except those of Panagra, which operated over Latin-American routes exclusively. A larger number, 434, is given in *Air Transportation*, II (June 1943), 16, which number is divided as follows: domestic, 358; transoceanic, 10; to Latin America, 53; Hawaii, 6; Alaska, 7.

153. Minutes cited in n. 151; ACFC Daily Diary, 16 Dec. 1941; ltr., S/W to

S/N, 14 Jan. 1942; memo to Rear Adm. John S. McCain from Maj. Gen. George E. Stratemeyer, C/AS, 17 Feb. 1943; History, FC Operations, p. 191. Three Sikorsky S-44 Clippers were nearing completion and were turned over to the Navy in 1942. (See also *Air Transportation*, II [June 1943], 15.)

154. Memo for C/AC from Col. Olds, 4 Dec. 1941.

155. Minutes cited in n. 151; memo to Rear Adm. McCain from C/AS, 17 Feb. 1943.

156. Contract DA W 535 ac-914, 13 Dec. 1941, and sup. contract #1 thereto, 17 Dec. 1941.

157. History, FC Operations, pp. 9-10.

158. For a detailed account of these early operations to and within the Southwest Pacific Area, see *ibid.*, pp. 9-18.

159. Sup. agreements, 13 Dec. 1941, to contracts DA W 535 ac-415 and DA W 535 ac-416.

160. Memo for Mr. Brownell from Gen. Olds, 13 Feb. 1942; memo for Gen. Arnold from Gen. George, 25 June 1942; History, FC Operations, pp. 180-81, 197-98.

161. AAF Historical Study No. 12, The Tenth Air Force, 1942, pp. 33-34; History, FC Operations, p. 198.

162. History, FC Operations, pp. 192-93, 197-98, 218. TWA operated under contract DA W 535 ac-1062, 24 Dec. 1941, and directive No. 1 thereto, 12 Jan. 1942. (See also T.W.A.'s Contribution to the War and History of TWA Foreign Contract Service, incl. to ltr., Otis F. Bryan to Lt. Col. Rex W. Smith, Jr., 25 Feb. 1943.)

163. Memos to Col. Thomas L. Mosley from J. V. Roscoe, PAA representative, 11 June 1942; History, FC Operations, pp. 196-97.

164. Ltr., Col. C.R. Smith, C/S ATC to L. Welch Pogue, 15 Aug. 1942; History, Caribbean Div., Pt. 2, pp. 144-47.

165. History, Caribbean Div., Pt. 2, pp. 143-44, 155.

166. Memo for Col. Mosley from J.V. Roscoe, 11 June 1942; memo for CG AAF from Col. L.P. Whitter and Capt.

Wm. M. Sheehan, 22 June 1942; memo for Gen. Arnold from Gen. George, 25 June 1942; History, FC Operations, pp. 196-97, 218.

167. History, North Atlantic Div., I, Pt. 1, 294-303, 318; contract DA W 535 ac-1476, 31 Jan. 1942; ltr., Lt. Col. Robert M. Love to Northeast Airlines, 3 Feb. 1942; Chronology of Inaugural Routes and Flights, North Atlantic Div., 15 Feb. 1945.

168. Contract DA W 535 ac-27361, 4 Apr. 1942; American Airlines Survey Flight, as cited in n. 137.

169. History, North Atlantic Div., I, Pt. 1, 311-15; contract DA W 535 ac-1062, 24 Dec. 1941, and directive No. 9 thereto, 4 Apr. 1942; Pilot's Report, TWA Survey Trip, 13-24 Apr. 1942; memo to Col. Mosley from M/Sgt. Joseph H. Walsh, 8 May 1942.

170. Northwest Air Route to Alaska, 1942-45, pp. 10-24.

171. Contract DA W 535 ac-1765, 20 Feb. 1942; ltr., Gen. Olds to Northwest Airlines, Inc., 7 Mar. 1942.

172. Northwest Air Route to Alaska, 1942-45, pp. 25-30; Summary of Northern Division operations with NWA Equipment, 27 Feb.-20 Apr. 1942, in ATC Hist. file.

173. Northwest Air Route to Alaska, 1942-45, p. 34.

174. *Ibid.*, pp. 35-36. Letters of intent were issued to Western Airlines on 16 April and 27 April, but the contract, W 535 ac-28400, was not approved until 17 June 1942.

175. Northwest Air Route to Alaska, 1942-45, p. 34.

176. Contract W 535 ac-29829, 25 June 1942.

177. Northwest Air Route to Alaska, 1942-45, pp. 37-39.

178. *Ibid.*, pp. 39-40.

179. The Air Transport Command in the Southwest Pacific, 7 Dec. 1941-1 Aug. 1944, pp. 10-13.

180. R&R, Gen. Arnold to Col. George, 29 Mar. 1942.

181. The Air Transport Command in the Southwest Pacific, n. 19, p. 12.

182. *Ibid.*, pp. 10-11, 13-15, 56-57.
183. Administrative History, Ferrying Command, 29 May 1941-30 June 1942, pp. 99-100; Leonard Eiserer, "Army Air Corps Outhauls all Domestic Carriers in Volume," *American Aviation*, 1 Aug. 1941, p. 6; excerpt from ltr., Robert E. Hotz to C/S ASC, 14 Feb. 1942.
184. Ltr., TAG to CG AAF *et al.*, 30 Apr. 1942.
185. Administrative History, Ferrying Command, pp. 122-23.
186. Memo for Col. George from Gen. Arnold, 24 Mar. 1942.
187. Ltr., Gen. Arnold to C/AS, 12 June 1942.
188. L.W. Pogue, Memorandum Concerning War Aviation Transport Services, 15 June 1942, in AAG 210.69H.
189. 1st ind. (ltr., Gen. Arnold to C/AS, 12 June 1942), C/AS to AC/AS, A-2, 16 June 1942; ltr., AAF to Brig. Gen. Hume Peabody, 17 June 1942.
190. AAF GO 8, 20 June 1942.
191. Administrative History, Ferrying Command, pp. 126-126a.
192. *Ibid.*, pp. 126-28; WD Circular 211, Sec. III, 1 July 1942.
193. AAF GO 8, 20 June 1942, directed the establishment of those two main divisions.
194. Ltr., TAG to CG AAFFC, 12 June 1942.
195. Ltr., TAG to CG ATC, 5 July 1942.
196. ATC Statistical Control Div., Military Personnel, Air Transport Command, 1942-44, and Summary of Operations of the Air Transport Command, 1943, pp. 9, 11.
197. Lt. Col. Oliver LaFarge, ATC Transport Aircraft in World War II: A Study of Types, Performance, and Fleet Augmentation, pp. 3-4, in ATC Hist. file.
198. Memo for S/W from President Roosevelt, 6 May 1942, in ATC 321.
199. On the subject of relations between the Ferrying Command or the Air Transport Command and the theaters, see the following: Lt. Col. Oliver LaFarge, Control of Strategic Air Transport, 20 Oct. 1945; Administrative History, Ferrying Command, 29 May 1941-30 June 1942, pp. 119-20; Administrative History, Air Transport Command, June 1942-Mar. 1943, pp. 136-42; Administrative History, Air Transport Command, Mar. 1943-July 1944, pp. 176-93; History, FC Operations, 7 Dec. 1941-30 June 1942, pp. 87-90.
200. History, FC Operations, pp. 87-90.
201. The Air Transport Command in the Southwest Pacific, 7 Dec. 1941-1 Aug. 1944, pp. 32-45; Northwest Air Route to Alaska, 1942-45, pp. 39-40; LaFarge, Control of Strategic Air Transport, 20 Oct. 1945.
202. Ltr., TAG to Commander in Chief, Southwest Pacific Area *et al.*, 6 June 1942.
203. Memo for Gen. Arnold from Gen. George, 17 Aug. 1942.

NOTES TO CHAPTER 10

1. Ltr., Marshall to CG USAFFE, 21 Nov. 1941; msg. #650, Adams to CG USAFFE, 29 Nov. 1941.
2. ABC-4, JCCSs-2, 25 Dec. 1941, and JCCSs-4, 27 Dec. 1941, U.S.-British Staff Conferences, in AFSHO files.
3. ABC-4/M5, JPC, Minutes, 5th Mtg., 29 Dec. 1941; ABC-4/5; Gen. Sir Archibald Wavell, Despatch on Operations in South-West Pacific, 15 Jan.-25 Feb. 1942.
4. Despatch on Operations in South-West Pacific.
5. Msg. #1, *sans origine* to TAG, 6 Jan. 1942; msg., Barnes to MacArthur, 9 Jan. 1942; msg. #1/92, Arnold to Brett, 10 Jan. 1942; memo for TAG from Brig. Gen. L.T. Gerow, 12 Jan. 1942; msg., Brett to Marshall, #ABDA 7, 17 Jan. 1942; msg. #AF 1/209, Marshall to CG USAFIA, 13 Jan. 1942. The daily Summary of Activities, Headquarters, Far East Air Force (described above, p. 206, and hereinafter cited as Sum. of Activities) indicates that Generals Brett and Brereton, together with Sir Charles Burnett, Australian chief of air staff, flew

from Darwin to Soerabaja on 9 Jan. 1942 and thence on the same day to Batavia, where on the following morning they met Wavell.

6. Msg. #00071, ABDACOM to Brit. Army Staff, Washington (Wavell to Marshall), 16 Jan. 1942.

7. *Ibid.*; msg. #AF 1/209, Marshall to CG USAFIA, 13 Jan. 1942.

8. Memo for TAG by Gen. Gerow, AC/S, 27 Jan. 1942, draft msg., Marshall to Brereton; History of USAFIA, 9 July 1943, Doc. 26, in History, Fifth Air Force, Pt. 1, Dec. 1941-Aug. 1942, App. II. The FEAF Summary of Activities, which in its January entries is valuable chiefly as record of Brereton's movements, shows him to have been in conference with Wavell and other key ABDA and U.S. personnel in Java from 10 through 17 January. He returned to Darwin from Batavia on the 18th, went to Townsville on the 19th, to Brisbane on the 20th, and to Melbourne on the 22d, from which place on 27 January he flew again to Darwin. Having left there on the following morning, he reached Malang that afternoon, by way of Soerabaja, for conferences with Colonel Eubank and staff. (See below, n. 27, n. 41.)

9. Msg. #ABDA 7, Brett to Marshall, 17 Jan. 1942; msg. #0190545, CR 0899, CINCAF (Brett) to AGWAR, 20 Jan. 1942.

10. Msg. to U.S. Embassy, London, secret and personal for the "Former Naval Person" from the President, 30 Jan. 1942; Adm. Thomas C. Hart, Narrative of Events; msg. #8, Java to TAG (Brett to Marshall), 3 Feb. 1942; memo for TAG by Eisenhower, 10 Feb. 1942.

11. Hart, Narrative of Events; memo by Gen. Gerow, AC/S, 27 Jan. 1942; msg. #ABDA 133, Bandoeng to AG, 31 Jan. 1942; Lewis H. Brereton, *The Brereton Diaries*, 3 October 1941-8 May 1945, pp. 78, 88.

12. Memo for TAG by Gen. Gerow, AC/S, 27 Jan. 1942, draft msg., Marshall to Brereton.

13. Interview with Mr. F.D. Van Horn, representative of Standard Oil in the East Indies from 1921 until late 1941,

20 Jan. 1944; Report, Dutch Contribution to the "War in the Air," in AFSHO files.

14. Ltr., Maj. Gen. L. Van Oyen to S/W Stimson, 15 Nov. 1942; msg. #1, MA, Bandoeng, 16 Jan. 1942.

15. CCS 41, 16 Feb. 1942, lists the strength of Allied forces present in the area, en route to the area, and projected for the future. This shows that British forces were concentrated in Burma, Malaya, Sumatra, and Borneo. The Australians had ground forces not only in Malaya but also in some of the islands in the southern East Indies. Timor and Amboina, for example, each had an Australian battalion. A part of the RAAF aircraft strength was said to be "obsolescent," but it also included several squadrons of Catalinas and Hudsons. A considerable number of Hurricanes were flown from Malaya to Sumatra upon the fall of Singapore. Some of these later reached Java.

16. ABC-4, JCCS-2, 25 Dec. 1941, Annex 1, memo for the President.

17. Memo for Col. James G. Taylor, AC Intel. Div. from Col. Earle L. Naiden, AC/AS, A-3, 23 Dec. 1941.

18. JCCS-2, Annex 1.

19. TAG to U.S. MA, Melbourne (sgd. Marshall), 8 Jan. 1942.

20. ABC-4, JCCS-9, 11 Jan. 1942; JCCS-10, 12 Jan. 1942; ABC-4/2A, accepted and amended, JPC Report, 13 Jan. 1942; JCCS-7, Annex 1, 31 Dec. 1941.

21. Msg. #AF 1/90, to U.S. MA, Melbourne, 6 Jan. 1942; History, Fifth Air Force, Pt. 1, pp. 34-35; *The Brereton Diaries*, p. 84.

22. The precise date of the arrival of the B-17's in Australia is uncertain. Colonel Hobson believes that it was 11 January. They arrived at Palmyra on 6 January and in Java on the 14th. (Msg. #1562, Emmons to C/AAF, 6 Jan. 1942; 19th Gp. Operations Record; information from Col. Kenneth B. Hobson, 25 June 1947.)

23. Shipment of Aircraft from the United States, Doc. #283, in History, Fifth Air Force, Pt. 1.

24. JCCS-9, 11 Jan. 1942; JCCS-10, 12 Jan. 1942; JCCS-12, 14 Jan. 1942.

25. History, Dir. of Air Transport.

26. Msg. #CRO918, Adams to CG USAF, Darwin, 31 Dec. 1941.

27. History, Fifth Air Force, Pt. 2, 1 Jan.-6 Mar. 1942; Minutes of Mtg., Administrative Planning Comm., 5 Jan. 1942, Doc. 658, in History, Fifth Air Force, Pt. 1; Sum. of Activities, 3 and 4 Jan. 1942, which provides a record of conferences at Melbourne between key American and Australian officials. At these conferences Brett expressed his conclusion "that Brisbane (Eagle Farm) was the best location for the primary base and construction and maintenance depots"; he suggested "that reception camp be located in Victoria"; and Townsville "was designated as an advance assembly and secondary maintenance depot base and the possibility of dispersal was discussed, particularly Charters [*sic.*] Towers." The discussion of the problem at Darwin included: additional airdrome facilities, supplies, a forward depot, dispersal facilities, and lines of communication. The discussions at Melbourne continued through the 7th; on the 8th, Brereton flew with Sir Charles Burnett to Darwin on the way to Java. (See above, n. 5.)

28. USSBS (Pacific) Interrogations 67, Capt. M. Fujita, staff of 2d Fleet, 20 Oct. 1945; 74, Capt. Chihaya Takahashi, staff of 11th Air Fleet, 20 Oct. 1945; 90, Capt. Kawakita Ishihara, staff of 3d Fleet, n.d.; 94, Comdr. Yutaka Isawa, on *Haruna*, 12 Oct. 1945; 331, Capt. Mitsugo Ihara, staff of 3d Fleet, 10 Nov. 1945; 387, Capt. Kameo Sonokawa, Gensan Air Gp., 14 Nov. 1945; 601, Comdr. Ryosuke Nomura, staff of 23d Air Flotilla, 28 Nov. 1945; Office of Naval Intel., The Java Sea Campaign.

29. Interview with Lt. Col. E.E. Northcutt, n.d.; TWX #1, Bandoeng to G-2, 13 Jan. 1942. On Brereton's departure from Soerabaja late on 28 December 1941, Eubank had remained "to direct bomber activities from there," and on the general's arrival at Darwin the next day, Maj. Cecil E. Combs informed him that there were "14 complete combat

crews available... 14 B-17's, 9 of which can operate at once on N.E.I. mission and three (3) of the remaining five can probably be placed in commission, others will require depot overhaul." (Sum. of Activities, 28 and 29 Dec. 1941.)

30. History, Fifth Air Force, Pt. 2, 1 Jan.-6 Mar. 1942; FEAF Hq. Diary, Doc. 28, in History, Fifth Air Force, Pt. 1; msg., ABDACOM to Army, Melbourne, recd. 22 Jan. 1942, Doc. 401, *ibid.* The headquarters of the ABDA Command was established at Lembang, approximately ten miles from Bandoeng, on 18 January. (The Java Sea Campaign, p. 13.) The FEAF Summary of Activities records the following notes of a conference between Brett and Brereton in Batavia on 10 January: "1. General Brett desires to make immediately available all ammunition and bombs for N.E.I. 2. Preparation to be made for air corps troops (consult with Barnes). 3. Brady, Lamb, Hipps, Hobbs and Hampton also Walsh to be moved to N.E.I. 4. A complete survey of airdromes on Java will be made immediately. 5. Transportation: Trucks and Cars. 6. Secret line between Soerabaja and Batavia will be arranged for."

31. 19th Gp. Opns. Record. This report claims a DD sunk and a BB hit. But there were apparently no battleships at Davao at this time and Japanese records do not mention the DD as having been sunk. They do mention a cruiser as having been severely damaged. (Ens. Toshio Nakamura's Notebook, Joint Intel. Center, POA, Navy #128; USSBS Intr. 90, Capt. K. Ishihara.) The Joint Army-Navy Assessment Committee does not list any war vessel as having been sunk at this time. (Japanese Naval and Merchant Losses during World War II, Feb. 1947 [hereinafter cited as JANAC, Jap Losses].)

32. 19th Gp. Opns. Record.

33. The Java Sea Campaign, pp. 14-15; Hart, Narrative of Events. In these operations on 11 and 12 January, two Japanese pursuits were shot down. One American PBV, one Dutch Catalina, and four Australian Hudsons were lost. (Msg., Merle-Smith to MILID, 13 Jan. 1942, Doc. 770, in History, Fifth Air

Force, Pt. 1.) The principal function of the PBV's was that of reconnaissance. The American PBV's of Navy Patrol Wing 10 reported to Admiral Hart; the Dutch planes to the Dutch naval commander. An important step was the coordination of all such operations under the Combined Operations and Intel. Center. (*The Brereton Diaries*, p. 78.)

34. Msg., Merle-Smith to MILID, 13 Jan. 1942; msg. #245, Wavell to Brett, 7 Jan. 1942, Doc. 1061, in History, Fifth Air Force, Pt. 1; interview with Col. Cecil E. Combs by author, 19 Jan. 1945.

35. GO 41, Hq. Allied Air Forces, 26 Aug. 1942; GO 27, GHQ SWPA, 1 Sept. 1942; msg. #381, Brereton to WD, 18 Jan. 1942; 19th Gp. Opns. Record.

36. 19th Gp. Opns. Record.

37. *Ibid.*; GO 26, 38, and 52, Hq. Fifth Air Force, 31 Oct., 2 and 18 Dec. 1942; GO 45, Hq. Allied Air Forces, 3 Sept. 1942; GO 18, Hq. FEAF, Bandoeng, 12 Feb. 1942; GO 27, GHQ SWPA, 1 Sept. 1942.

38. In this mission, the crews claimed seven enemy pursuits shot down. (19th Gp. Opns. Record; GO 2, SWPA Command, 15 Feb. 1942; msg. #1, Bandoeng to WD, 20 Jan. 1942; GO 16, Hq. FEAF, 12 Feb. 1942; GO 38 and 52, Hq. Fifth Air Force, 2 and 18 Dec. 1942.)

39. GO 2, SWP Command, 15 Feb. 1942; msg. #92, MacArthur to AGWAR, 20 Jan. 1942; 19th Gp. Opns. Record.

40. Interview with Capt. Vincent L. Snyder, 5 Dec. 1942; 19th Gp. Opns. Record.

41. 19th Gp. Opns. Record; unrecorded interview with Brig. Gen. Francis M. Brady by author, 7 Dec. 1944; History, 7th Bomb. Gp.; msg., Brett to Bandoeng, 6 Jan. 1942, Doc. 488, in History, Fifth Air Force, Pt. 1; ltr., Caldwell to Brett, 17 Feb. 1942, Doc. 1081, *ibid.* Notes on a conference of Brereton with Eubank and staff on 29 January include: "Cut down high pressure work of crews and men. Pilot fatigue will cost." (Sum. of Activities, 29 Jan. 1942.)

42. 19th Gp. Opns. Record.

43. USSBS Intr 424, Capt. Bunzo

Shibata, 18 Nov. 1945; 94, Comdr. Y. Isawa; 479, Capt. M. Genda, 28-29 Nov. 1945.

44. Missing Personnel Investigation Unit, Report on New Guinea, Oct. 1945; USSBS Intr. 446, Capt. Takashi Miyazaki, 19 Nov. 1945, and 424, Capt. B. Shibata.

45. The Java Sea Campaign, pp. 16-24. JANAC, Jap Losses also credits Dutch planes with one 7,000-ton cargo vessel.

46. 19th Gp. Opns. Record; msg., ABDA to WD, 28 Jan. 1945; GO 33, Hq. Allied Air Forces, 22 July 1942; GO 2, Hq. SWP Command, 15 Feb. 1942; GO 16, Hq. FEAF, 12 Feb. 1942. JANAC, Jap Losses does not substantiate the shipping claims of the bombers in these missions.

47. Msg. #3, Bandoeng to WD, 25 Jan. 1942; msg. #1, Bandoeng to WD, 28 Jan. 1942; interview with Lt. Frank F. Lawrence, 3 Apr. 1942; Brady interview, as cited in n. 41; 19th Gp. Opns. Record. General Brereton has indicated that he opposed the employment of the bombers against the Malay Peninsula. (*The Brereton Diaries*, p. 88.)

48. USSBS Intr. 424.

49. 19th Gp. Opns. Record; naval msg. #F35, from CINC Asiatic Fleet, 4 Feb. 1942; George Weller, "Luck to the Fighters," in *Military Affairs*, VIII (Winter, 1944), 295.

50. Msg. #1, Brett to Marshall, 12 Feb. 1942; Col. W. P. Fisher, Report on Philippines and Java Operations; Brady interview; CCS 41, 16 Feb. 1942.

51. History, 17th Pursuit Sq.; Weller, "Luck to the Fighters," p. 207. Pilots and crews were housed in the small village of Blimbing, five miles from Ngoro field.

52. *The Brereton Diaries*, pp. 79, 81; msg. #ABDA 152, Bandoeng to TAG, 1 Feb. 1942.

53. Msg., USAFIA to ABDACOM, 8 Feb. 1942, Doc. 921, in History, Fifth Air Force, Pt. 1; History, Fifth Air Force, Pt. 2, 1 Jan.-6 Mar. 1942.

54. Msg. #5, Melbourne to AGO, 7 Jan. 1942; msg. #129, TAG to CG USAFIA, 17 Jan. 1942; msg. #19, Java to

ABDACOM, 10 Feb. 1942. The War Department replied to one complaint that unit loading had been studied and was not considered practicable in view of the shipping situation. (Msg. #1/249, Adams to CG USAFIA, 15 Jan. 1942.)

55. History, 7th Bomb. Gp.

56. Msg., Melbourne to TAG, sgd. Clagett, 9 Jan. 1942; ltr., Lt. Robert H. Odell to AC/S, G-2, 27 Jan. 1942.

57. Brady interview; msg., Wagner, Mahoney, Strauss to [WD], 1 Feb. 1942, Doc. 65, in History, Fifth Air Force, Pt. 1; msg., Lee to U.S. MA, 4 Jan. 1942, Doc. 805, *ibid*.

58. Weller, "Luck to the Fighters," pp. 269, 280; History, Fifth Air Force, Pt. 2, 1 Jan.-6 Mar. 1942.

59. History, 17th Pursuit Sq.; msg., Hq. USAFIA, Melbourne to CO Hq. USA, Brisbane, 12 Jan. 1942, Doc. 958, in History, Fifth Air Force, Pt. 1.

60. History, 17th Pursuit Sq.; Lt. Col. W.A. Sheppard and Maj. E.B. Gilmore statement, 1 Feb. 1945; Weller, "Luck to the Fighters," pp. 281-83; interview with Maj. Alan D. Moore, 20 Jan. 1944.

61. Msgs. in History, Fifth Air Force, Pt. 1: Brereton to Wavell, 22 Jan. 1942, Doc. 159; Brereton to CO, Base #3, 24 Jan. 1942, Doc. 975; Brereton to CO, RAAF, Station Amberley, 24 Jan. 1942, Doc. 978; Brereton to CO, Base #2, Townsville, 26 Jan. 1942, Doc. 980; Brett to Hq. USAFIA, 27 Jan. 1942, Doc. 983; Brett to AGWAR, 1 Feb. 1942, Doc. 165. See also interview with Lt. Col. William Lane, Jr., 15 May 1944.

62. Lane interview; diary of Maj. Paul B. Gambonini, 29 Jan. to 1 Mar. 1942.

63. See sources in n. 62 and also msg. #25, Java to TAG, 9 Feb. 1942; msg. #1, from Bandoeng, 6 Feb. 1942; GO 12, Hq. Allied Air Forces, 25 May 1942; GO 25, GHQ SWPA, 27 Aug. 1942; History, 17th Pursuit Sq.; msg. #ABDA 256, 9 Feb. 1942, ABDACOM to Arnold. Early reports to FEAF headquarters indicated: "A flight of 13 P-40's took off from Koepang and landed at Den Passar. While servicing was in progress at Den Passar a plane was sighted in the dis-

tance. The flight leader took off with the 8 P-40's already serviced, preparing for an attack. The flight of 8 was attacked by 16 'O' type fighters and the ensuing battle lasted from 15-20 minutes. The flight of 8 P-40's landed later at Soerabaja. Word was received that after the take off, the field was attacked by 31 twin-engined bombers which dropped bombs on the field destroying the 5 remaining P-40's." (Sum. of Activities, 5 Feb. 1942.)

64. Capt. Cecil C. Knudsen's diary, 1 Jan.-27 Dec. 1942; 19th Gp. Opns. Record; History, 17th Pursuit Sq.; Gambonini diary; ltr., Maj. John H. Davies to CO, 91st Bomb. Sq., 3 Feb. 1942, in History, 27th Bomb. Gp.; msg. #7, Brett to AGWAR, 11 Feb. 1942; Fisher report, as cited in n. 50; msg., Barnes to CO, Base #3, Brisbane, 26 Jan. 1942.

65. Fisher report; Lane interview; History, 17th Pursuit Sq.

66. Msg. #1, Brett to TAG, 2 Feb. 1942; msg. #762, Cairo to TAG, 4 Feb. 1942; msg. #13, Brett to TAG, 10 Feb. 1942; msg., Brett to AGWAR, 7 Feb. 1942; msg. #ABDA 181, ABDACOM to Magruder, 2 Feb. 1942; Brady interview.

67. 19th Gp. Opns. Record; msg. #231, Brett to Marshall, 7 Feb. 1942; Lt. Col. John A. Rouse's diary, 7 Dec. 1941-25 Nov. 1942. Entries in the FEAF Summary of Activities through February provide chiefly an incomplete record of combat operations. An entry for 3 February shows an aircraft status of 10 B-17's and 3 LB-30's, of which "all but one B-17 and one LB-30 were on missions as scheduled," and for 4 February, the notation reads as follows: "Available: seven P-40's, eight B-17's (undergoing routine maintenance) and one LB-30."

68. 19th Gp. Opns. Record; msg. #2, from Bandoeng, 9 Feb. 1942; msg. #25, Java to TAG, 9 Feb. 1942; GO 27 and 35, GHQ SWPA, 1 and 16 Sept. 1942; GO 4, 11, 20, 26, 37, 38, and 52, Fifth Air Force, 6, 30 Sept., 12, 31 Oct., 27 Nov., 2 and 16 Dec. 1942.

69. Brady interview; 19th Gp. Opns. Record; 19th Gp. Diary.

70. Msg., ABDACOM #0135, 17 Feb. 1942; msg. #10, Java to AGWAR, 18

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Feb. 1942; History, 27th Bomb. Gp.; Sum. of Activities, 12 Feb. 1942.

71. History, 27th Bomb. Gp.

72. History, 17th Pursuit Sq.; Sum. of Activities, 17 Feb. 1942, which places the time of attack at 1020.

73. Msg., ABDACOM to Barnes, USAFIA, 4 Feb. 1942; Gen. Sir Archibald Wavell, Despatch on Operations in South-West Pacific, 15 Jan.-25 Feb. 1942.

74. Msgs. in History, Fifth Air Force, Pt. 1: #13, Brett to CG USAFIA, 5 Feb. 1942, Doc. 749; Batavia to Army, Melbourne, 9 Feb. 1942, Doc. 748; #21, Brett to USAFIA, 13 Feb. 1942, Doc. 757. See also msg. #14, Brett to USAFIA, 12 Feb. 1942; msg. #20, Brett to USAFIA, 12 Feb. 1942; The Java Sea Campaign, pp. 36-37.

75. The Java Sea Campaign, pp. 36-37; msg., ABDA 384A, ABDACOM to USAFIA, 16 Feb. 1942.

76. History, 17th Pursuit Sq.; GO 27, Hq. Allied Air Forces, 11 July 1942; GO 11, Hq. Fifth Air Force, 30 Sept. 1942; Gambonini diary; 19th Gp. Opns. Record; 19th Gp. Diary; History, 27th Bomb. Gp.; Sum. of Activities, 19 Feb. 1942; GO 2, Hq. SWP Command, 15 Feb. 1942; GO 20, Hq. Allied Air Forces, 20 June 1942. JANAC, Jap Losses does not list any shipping sunk by army aircraft on these days.

77. Msg. #26 from Java, 20 Feb. 1942; 19th Gp. Opns. Record; GO 40, GHQ, 3 Oct. 1942; GO 20 and 38, Hq. Fifth AF, 12 Oct. and 2 Dec. 1942; History, 17th Pursuit Sq.; Gambonini diary; Sum. of Activities, 19 Feb. 1942.

78. USSBS Intrs. 479 and 113, Capts. M. Genda and M. Fuchido.

79. The warning had come from General Marshall who stated that there were indications that enemy carrier operations might be expected on the northeast coast of Australia. (Msg. #235, Marshall to CG USAFIA, 2 [?] Feb. 1942.)

80. Ltr., Oestreicher to Wurtsmith, 21 July 1942, Doc. 932, in History, Fifth Air Force, Pt. 1.

81. *Ibid.*; msg. #309, Melbourne to TAG, 22 Feb. 1942.

82. GO 27 and 62, GHQ, 1 Sept. and 23 Dec. 1942; msg. #309, Melbourne to TAG, 22 Feb. 1942; ltr., Oestreicher to Wurtsmith, 21 July 1942, Doc. 932, in History, Fifth Air Force, Pt. 1; Report of Air Attack on Base Section No. One, 24 Feb. 1942, Doc. 799, *ibid.*

83. Msg. #78, Melbourne to MILID, 20 Feb. 1942; msg. #293, Melbourne to AGWAR, 20 Feb. 1942; msg. #298, Melbourne to TAG, 20 Feb. 1942; msg. #308, Melbourne to TAG, 21 Feb. 1942; Doc. 799, as cited in n. 82.

84. The Java Sea Campaign, pp. 40-44; 19th Gp. Opns. Record; 19th Gp. Diary; Sum. of Activities, 20 Feb. 1942, which records FEAF losses for the day as "five B-17's, five P-40's and two dive bombers...to combat activity, anti aircraft and strafing inflicted by enemy action." JANAC, Jap Losses does not confirm the transport claimed sunk.

85. History, 17th Pursuit Sq.; ltr., Maj. W.F. Smith to Mrs. Sprague, 14 Apr. 1942; Gambonini diary; History, 27th Bomb. Gp.; 19th Gp. Opns. Record; Sum. of Activities, 20 Feb. 1942.

86. 19th Gp. Diary; 19th Gp. Opns. Record; Sum. of Activities, 20 and 22 Feb. 1942.

87. Msg. #AG 381, Brett to Arnold, 18 Feb. 1942.

88. Msg. #ABDA 448A, GHQ Java to TAG, sgd. Brett, 18 Feb. 1942; msg. #2, Brett to Marshall, 20 Feb. 1942; msg. #5, Java to AGWAR, 21 Feb. 1942.

89. Msg. #ABDA 530, Java to TAG, sgd. Brett, 23 Feb. 1942.

90. Msg. #12, Brett to AGWAR, 22 Feb. 1942; GO 18, Hq. FEAF, 24 Feb. 1942; Sum. of Activities, 24 Feb. 1942; msg., ABDA to Arnold, sgd. Naiden, 25 Feb. 1942; *The Brereton Diaries*, pp. 98-99. Brereton states here that Brett gave him his choice of theater, Australia or India, and that he chose India.

91. Msg. #DBA 19, CCS to ABDA-COM, 20 Feb. 1942; The Java Sea Campaign, p. 44.

92. Memo for C/S from AAF Hq., 20 Feb. 1942; msg. #409, Arnold to Brett, 24 Feb. 1942. Actually it had been intended in Washington that both Brett

and Brereton should go to Australia. (Msg., Arnold to Brett, 22 Feb. 1942.)

93. Memo for TAG by Eisenhower, 23 Feb. 1942, draft msg., Marshall to Brett.

94. Msg. #DBA 28, CCS to ABDACOM, 25 Feb. 1942. The Dutch opposed the change in the ABDACOM Command. Wavell argued that ABDACOM should be dissolved rather than withdrawn. The American viewpoint was expressed in a memorandum by General Eisenhower that the CCS were not abandoning the fight in the ABDA area, that Wavell was ordered to dissolve his own headquarters in consideration of the fact that the area of battle was almost exclusively Dutch and it was consequently necessary to place direction and control in Dutch hands. (Msg., Lt. Gov. H.J. Van Mook to Marshall, 22 Feb. 1942; msg. #02076, Wavell to Britman for CCS, 22 Feb. 1942, in CPS 19/D, 24 Feb. 1942; memo for TAG from Eisenhower, 24 Feb. 1942, draft msg., Marshall to U.S. MA, Batavia.)

95. Msg. #ABDA 233, ABDACOM to USAFIA, 7 Feb. 1942.

96. Msg., Barnes to ABDACOM, 9 Feb. 1942, Doc. 708; msg. from Lt. William B. Ackerman, Doc. 714; Roster of pilots on *Langley*, 19 Feb. 1942, Doc. 937, all in History, Fifth Air Force, Pt. 1.

97. Msg. #ABDA 403, ABDACOM to USAFIA, 17 Feb. 1942; msg., ABDACOM to USAFIA, 17 Feb. 1942; msg., Barnes to Brett, 20 Feb. 1942. There was some confusion as to the proper destination of this convoy since, in addition to the NEI and Burma, the defense of Koepang and Darwin still was considered of great importance.

98. Msg., Barnes to ABDACOM, 19 Feb. 1942; msg. #CCOS 17, ABDACOM to CCS, 22 Feb. 1942; msg. #02047, sgdt. Wavell, 22 Feb. 1942; msg., Barnes to Brett, 23 Feb. 1942; msg., Brett to ABDACOM, 25 Feb. 1942.

99. History, 17th Pursuit Sq.; Gambonini diary. On 26 February, six Brewsters and six Hurricanes arrived at Blimbing to fly with the 17th Squadron.

100. 19th Gp. Diary; 19th Gp. Opns.

Record; Sum. of Activities, 22 Feb. 1942. It should be noted that there has been no confirmation from enemy sources of the shipping claims. (See JANAC, Jap Losses.)

101. The Java Sea Campaign, pp. 49-50; History, 17th Pursuit Sq.; 19th Gp. Opns. Record; Gambonini diary; USSBS Naval Report, The Japanese Invasion of the Philippines. See also USSBS Intr. 90.

102. In this naval battle, two Japanese destroyers were damaged. Two Allied cruisers and three destroyers were sunk on 27/28 February; three more destroyers and three cruisers went down on the following day. Of the Allied fleet, only four American destroyers made their escape. (USSBS Naval Report, The Japanese Invasion of the Philippines; USSBS Intr. 90; The Java Sea Campaign, pp. 50 ff.)

103. The Java Sea Campaign, p. 81; Fisher report; History, 17th Pursuit Sq.; Gambonini diary; GO 27, Hq. Allied Air Forces, 11 July 1942; GO 25, GHQ, 27 Aug. 1942.

104. Gambonini diary; Fisher report; Edward O. Yerington, The Evacuation of Java, in 435th [Bomb. Sq.] Overseas, in History, 19th Bomb. Gp.; History, 17th Pursuit Sq.

105. Information supplied by Col. William Hipps.

106. The Java Sea Campaign, pp. 45 ff.; msg. from Lt. William P. Ackerman, Doc. 715, in History, Fifth Air Force, Pt. 1; Fleet Adm. Ernest J. King, First Official Report to the Secretary of the Navy, 1 Mar. 1944.

107. GO 12, Hq. Allied Air Forces, 25 May 1942; GO 58, Hq. Fifth Air Force, 31 Dec. 1942; Rouse diary; Knudsen diary, as cited in n. 64; msg., Hq. USA, Broome to USAFIA, 25 Feb. 1942; msg., Perrin to CG USAFIA, 26 Feb. 1942; msg., Brett to Perrin, 28 Feb. 1942.

108. Gambonini diary; Fisher report; Edward O. Yerington, The Evacuation of Java; History, 17th Pursuit Sq.

109. History, 17th Pursuit Sq.; ltr., Maj. Gen. H.L. George to CG AAF, 15 Jan. 1944; GO 30, WD, 8 Apr. 1944; Knudsen diary; Rouse diary; Lt. Col.

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Karl Truesdale, Jr., to Torn, 17 Mar. 1942.

110. The principal sources for the pursuit statistics are the History, 17th Squadron and the Digest of the Air Phase in the Philippines, in AAG 000-800, Misc. Phil. Fisher report, Lane interview, Gambonini diary, and the messages from the theater provide additional documentation.

111. 19th Gp. Opns. Record. Early reports of claims were quite unreliable, particularly as they concerned shipping. It should be pointed out that from December 1941 through 5 March 1942, in both the Philippines and the NEI, JANAC credits all army aircraft (U.S., British, Dutch, Australian) with no more than three minesweepers, four passenger or cargo vessels, and one "converted salvage" vessel sunk, and a part in sinking two other cargo vessels. A recapitulation of bombers destroyed was made by the Command and General Staff School, dated 12 May 1945, in order to determine if any bombsights fell into the hands of the enemy. This study lists the thirty-eight planes destroyed in Java, but breaks them down somewhat differently: six shot down, six lost by accident, twenty destroyed on ground by enemy action, five destroyed upon evacuation, and one in manner unidentified. In addition it lists six destroyed in Australia between 28 December and 3 March.

112. Msg., Fort Mills to AGWAR, 19 Mar. 1942; msg. #Aquila 5, Brereton to AGWAR, 29 Mar. 1942; Tactical Lessons from Aircraft in Combat, 27 Mar. 1942, Doc. 22, in History, Fifth Air Force, Pt. 1; interviews with Maj. Frank P. Bostrom, 5 Dec. 1942; Maj. Edward C. Teats, 5 Dec. 1942 [?]; Capt. H.C. Smelser, 6 Apr. 1942; Lt. Robert A. Trenkle, 7 Apr. 1942; Capt. E.S. Green, 6 Apr. 1942; msg. #ABDA 456, Java to TAG, 19 Feb. 1942; msg. #ABDA 37DX, Java to TAG, 17 Feb. 1942.

113. Smelser interview.

114. History, 27th Bomb. Gp.; interview with Maj. John Davies, 9 Dec. 1942; msg., Adams to CG USAF, Darwin, 5 Jan. 1942.

115. Fisher report; msg. #2 from Ban-

doeng, 12 Feb. 1942; msg. #17, Java to TAG, 19 Feb. 1942; msg. #389, Adams to CG USAFIA, 22 Feb. 1942; report by Lt. Col. William Lane, Information of Tactical Value on Japanese Navy "O" Fighters, in AFSHO files.

NOTES TO CHAPTER 11

1. Msg. #422, *sans origine* to TAG, 2 Mar. 1942.

2. Navy msg. #ABDA 74 to AL-USNA, Melbourne, 25 Jan. 1942; msg. #22, Chungking to TAG, 26 Jan. 1942; msg. #15, Java to AGO, 13 Feb. 1942; msg. #483, *sans origine* to TAG, 4 Mar. 1942; *Biennial Report*, C/S to Sec. of War, 1 July 1941-30 June 1943.

3. Msg. #295, Melbourne to AGWAR, 20 Feb. 1942; msg. #600, Wainwright to TAG, 26 Mar. 1942.

4. Statements of Maj. David L. Obert (14 May 1945), Maj. Stewart W. Robb (30 Nov. 1944), and Maj. Ben S. Brown (25 Oct. 1944); History, 24th Pursuit Gp.; Allison Ind, *Bataan, the Judgment Seat* (New York, 1944), pp. 213 ff.

5. Obert statement.

6. Msg. #205, MacArthur to TAG, 5 Feb. 1942; msg. #413, Fort Mills to AGO, 4 Mar. 1942; msg., Arnold to MacArthur, 4 Mar. 1942; GO 39 and 40, Hq. USAFFE, 12 Mar. 1942; combat report of Capt. William M. Rowe, in A-2 Library; History, 24th Pursuit Gp. The Joint Army and Navy Assessment Committee does not confirm the sinking of these vessels. "Bataan Diary of Major Achille C. Tisdelle," ed. by Louis Morton, *Military Affairs*, XI (Fall, 1947), 139-40, makes note of the mission as follows: "Our combination-bomber-attack-pursuit -P-40 airforce was on a party for the Nips in Subi [Subic Bay] last night, each plane carrying a hundred pound bomb, plus smaller bombs. They got the Nips with their pants down and sank two freighters and one tanker. Observers on Mount Samat stated that it was a lovely show. Only two of the three P-40's returned. So, now we have two airplanes only."

7. History, 24th Pursuit Gp.; Robb

statement; Lt. Col. William J. Kennard, Report on Philippine and Australian Activities, 14 Nov. 1942, in AAG, Reports of Air Surgeon; Rowe combat report; statement of Col. Ray Elsmore, Doc. 30 a, in History, Fifth Air Force, Pt. 1; GO 37, Hq. USAFIA, 5 Apr. 1942; GO 26, GHQ SWPA, 28 Aug. 1942.

8. Elsmore statement; msg. #20, MacArthur to TAG, 7 Jan. 1942; msg. #116, Ft. Mills to AG, 24 Jan. 1942; Supplemental Report on Airfields, 1 Mar. 1942, Doc. 30, in History, Fifth Air Force, Pt. 1; unrecorded interview with Col. Cecil E. Combs by Maj. R.L. Watson, 19 Jan. 1945.

9. Elsmore statement

10. Msg. #252, MacArthur to Roosevelt, 11 Feb. 1942; msg., Hq. USAFFE, Ft. Mills to Sharp, Del Monte for MacArthur, sgd. Marshall, 15 and 16 Mar. 1942.

11. Msg. #252, Ft. Mills to TAG, MacArthur for Roosevelt, 11 Feb. 1942; msg. #5, Australia to Marshall, 21 Mar. 1942; msg., Hq. USAFFE to Del Monte for MacArthur, sgd. Marshall, 15 Mar. 1942; memo for Gen. Brett by Gen. Royce, 6 Apr. 1942, in AFSHO files; History, 435th Sq.; GO 37, Hq. USAFIA, 5 Apr. 1942.

12. USSBS (Pacific) Intr. 503, Vice Adm. S. Fukudome, 9 Dec. 1945.

13. CPS 24, 14 Mar. 1942. See also USSBS, *Employment of Forces under the Southwest Pacific Command*, Feb. 1947, p. 4.

14. CCS 18/1, 13 Mar. 1942.

15. JCS 5th Mtg., 9 Mar. 1942; JCS 6th Mtg., 16 Mar. 1942; study prepared by Strategy and Policy Gp., OPD, attached to JCS 152/1, 12 Dec. 1942.

16. It should be noted that Darwin and Port Moresby were merely outposts, and at this time were not expected to hold out long against an enemy attack. The main Australian forces were to be disposed for protection of the vital Brisbane-Melbourne area. (CPS 24, 14 Mar. 1942; USSBS, *Employment of Forces*, as in n. 13.) In the Darwin area, there were no more than twenty-two heavy anti-aircraft guns and six 6-inch coastal guns;

and at Port Moresby only ten anti-aircraft guns and two coastal guns. (CPS 24, 14 Mar. 1942.)

17. Msg., Washington to CG USAFIA, 12 Mar. 1942, Doc. 278, in History, Fifth Air Force, Pt. 1.

18. Msg. #510, *sans origine* to TAG, sgd. Brett, 8 Mar. 1942.

19. Brett's operations officer later submitted a modified plan to include six areas with combat squadrons located as follows: Darwin-Daly Waters, Cloncurry-Townsville, Brisbane, Sydney, Melbourne, and Perth. Curiously, although pursuit units were to be located at Darwin, Brisbane, and Sydney, none were to be placed at Townsville. (Memo for C/AS by Col. Ross G. Hoyt and concurred in by A-1, A-2, and A-4, 24 Mar. 1942.)

20. GO 16, Hq. USAFIA, 24 Feb. 1942.

21. Shipment of A/C from the U.S., Doc. 283, in History, Fifth Air Force, Pt. 1; msg. #754, Australia to AGWAR, 18 Mar. 1942.

22. History, V Fighter Command, chap. I; History, 41st Fighter Sq.; Flying Time of the 49th Pursuit Group, Doc. 926, in History, Fifth Air Force, Pt. 1.

23. AAF Historical Study No. 9, The AAF in Australia, to the Summer of 1942, pp. 37-43.

24. Shipment of A/C from the U.S., as cited in n. 21; msg. #754, Australia to AGWAR, 18 Mar. 1942.

25. Msg., Brett to AGWAR, 26 Feb. 1942; 435th [Bomb. Sq.] Overseas; History, 19th Bomb. Gp.; interview with Col. Richard H. Carmichael, 5 Dec. 1942; memo for Chief AAF by Col. Vandenberg, 16 Feb. 1942; msg. #570, Brett to AG, 9 Mar. 1942; msg. #3/219, Ulio to CG USAFIA, 11 Mar. 1942.

26. History, 43d Bomb. Gp.; interview with Col. Harold R. Wells, 21 May 1943; History, 63d Bomb. Sq.; History, 19th Bomb. Gp.; memo for Chief AAF by Eisenhower, 19 Mar. 1942; memo for WPD by C/AS, 20 Mar. 1942; msg. #707, Marshall to USAFIA, 16 Mar. 1942; msg. #1188, Brett to TAG, 27 Mar. 1942.

27. Histories, 3d and 27th Bomb.

Gps.; msg. #57, Ullo to CG USAFIA, 16 Mar. 1942; interview with Maj. John Davies, 9 Dec. 1942.

28. History, 38th Bomb. Gp.; msg., MacArthur to AGWAR, 24 Apr. 1942.

29. From the RAAF Intelligence Summaries, it would appear that almost all of these Catalinas and Hudsons which were not lost in combat were lost either in accidents or completely worn out from overwork.

30. RAAF Intel. Sums.

31. History, V Fighter Command; George Henry Johnston, *The Toughest Fighting in the World* (New York, 1943), pp. 13, 52; Osmar White, *Green Armour* (New York, 1945), pp. 56, 72, 76.

32. The two major bases for operations against the Japanese in the North-eastern Area were Townsville and Port Moresby. At Townsville, there were at least four operational fields at this time: Garbutt, Antil Plains, Reid River, and Charters Towers. Others were to be constructed up the Cape York Peninsula, the most important being Iron Range. At Port Moresby, there were three being used: Seven Mile, which was the major field; Three Mile and Ten Mile, both of which were little more than emergency fields. In wet weather, for example, pursuit operations had to be transferred from Three Mile to Seven Mile. (Histories, 35th and 36th Sqs.) Plans were under way for the construction of four more fields near Port Moresby, and all would be operational by October.

33. RAAF Intel. Sums.; 435th Overseas; GO 18, Hq. Allied Air Forces, 6 June 1942.

34. ONI Combat Narratives, Early Raids in the Pacific Ocean, 1 Feb.-10 Mar. 1942; RAAF Intel. Sums.; 435th Overseas; USSBS Memo #Nav 11, 16 Oct. 1945. The Joint Army-Navy Assessment Committee listed only three ships as having been sunk: one cargo vessel by joint Army-Navy efforts, and one converted light cruiser and one converted minesweeper by carrier planes.

35. Msg. #625, Wainwright to WD, 28 Mar. 1942.

36. He reported that before leaving Corregidor he had prepared plans for an air attack to be staged from Australia through Mindanao against points in the Philippines, and General Sutherland later stated that MacArthur "originated the idea" of this attack. (Msg. #56, MacArthur to Marshall, 31 Mar. 1942; interview with Lt. Gen. Richard K. Sutherland by Walter D. Edmonds, 4 June 1945.)

37. Histories, 27th and 3d Gps.; 13th and 90th Sqs.; 435th Overseas; Obert and Brown statements.

38. Histories, 27th and 3d Gps.; 12th and 90th Sqs.; 435th Overseas.

39. Msg., Marshall to MacArthur, #1097, 4 Apr. 1942; CM-IN-3458 (4-19-42), USAFFE to Marshall, #AC 365, 19 Apr. 1942; CCS 10th Mtg., 7 Mar. 1942; JCS 5th Mtg., 9 Mar. 1942; CCS 12th Mtg., 17 Mar. 1942; USSBS, *Employment of Forces*.

40. USSBS, *Employment of Forces*. See discussion of modifications of original directive in JWPC 87/1, 2 Oct. 1943.

41. GO 1, Hq. SWPA, 18 Apr. 1942. MacArthur believed that none of his forces was adequate to carry out his directive. Without a carrier, he said, his naval forces would be limited only to minor operations; except for less than two divisions of Australian infantry, his ground forces were inadequately trained; and because of a lack of organization and training, his air forces would require at least four months of intensive effort to reach a satisfactory condition. (Msg. #538, MacArthur to Marshall, 1 May 1942.)

42. GO 1 (with Annex 1), Hq. Allied Air Forces, 20 Apr. 1942.

43. Interview with Lt. Col. C.D. Kauffman, Signal Sec., FEASC, 12 Aug. 1944; Lt. Gen. George Brett report, Air Operations in Australia, Summary Q, in AFSHO files; GO 1 and 4, Hq. Allied Air Forces, 20 Apr. and 2 May 1942; memo for C/S, WD from Maj. Gen. Robert C. Richardson, Jr., Report #5, 9 July 1942.

44. Richardson Report #5; GO 6, Hq. Allied Air Forces, 11 May 1942; Brett report, as in n. 43.

45. Richardson Report #5.
46. Brett report, Sum. H.
47. *Ibid.*; GO 5 and 10, Hq. Allied Air Forces, 4 and 19 May 1942; Opns. Instructions 3 and 7, Hq. Allied Air Forces, 20 and 28 May 1942.
48. GO 2 and 13, Hq. Allied Air Forces, 27 Apr. and 31 May 1942.
49. Brett report, Sum. H; Circular Ltr. 42-13, Hq. U.S. Army Air Services, 19 May 1942, in AFSHO files; Circular Ltr., 42-1, Hq. Allied Air Forces, 27 Apr. 1942, in Brett report.
50. History, 4th Air Depot Gp.; Circular Ltr. 42-1, as cited in n. 49.
51. History, Air Service Command in SWPA; GO 4, Hq. U.S. Army Air Services, 11 May 1942; ltr., Sperry Gyroscope Co. to AAF Civilian Personnel, 15 May 1942; interview with Milton J. Getker, 28 July 1943.
52. History, ASC in SWPA, pp. 5 ff.
53. *Ibid.*; History, 4th AD Gp.
54. The Air Transport Command in the Southwest Pacific, 7 Dec. 1941-1 Aug. 1944, pp. 12-15; ltr., AFA[T]C to CG AAF, 17 June 1942; ltr., Arnold to CG ASC, attached to R&R, AFDAS to AFATC, 6 June 1942.
55. ATC in the Southwest Pacific, pp. 32, 61-62.
56. Board of Economic Warfare, Developments in the War Economies of Australia and New Zealand during May 1942, 25 June 1942.
57. In this first important action of the P-39's in the SWPA, three enemy aircraft were claimed by the American pilots, and four P-39's were lost. This was a heavy loss, especially in view of the loss of 11 P-39's in the flight of the unit from Australia to Port Moresby. (Histories, 35th and 36th Sqs.; msg. #15, Scanlon to Allied Air Forces, 5 May 1942; Hq. Allied Air Forces, Operations Report, 29/30 Apr. 1942.)
58. Histories, 3d and 27th Gps.; *The Marauder, a Book of the 22nd Bomb Group* (Sydney, 1944).
59. Histories, 8th Photo Sq., 435th Bomb. Sq., and 3d Bomb. Gp.; interview with Maj. Frank P. Bostrom, 5 Dec. 1942.

60. See sources in n. 59.
61. History, 19th Bomb. Gp.

NOTES TO CHAPTER 12

1. USSBS (Pacific) Interrogation 503, Vice Adm. Shigeru Fukudome, 9 Dec. 1945, p. 37.
2. AWPDP/1, Tab 8, (Joint Board) Estimate of U.S. Over-all Production Requirements, J.B. No. 355 (Serial 707), 11 Sept. 1941, Sec. II, Pt. III, App. II.
3. Memo for WPD from S/AS, 9 Dec. 1941.
4. JCCSS-10, Annex No. 2, Defense of Island Bases between Hawaii and Australia, 13 Jan. 1942.
5. JCCSS-10, 12 Jan. 1942.
6. JCCSS-10, Annex No. 2.
7. History, 67th Fighter Sq.; History, 68th Fighter Sq., Actv. to 31 Dec. 1942; memo for Col. Vanaman from AC/AS, AWPDP, 20 Jan. 1942.
8. JCCSS-9, 11 Jan. 1942.
9. Memo for Col. Vanaman from AC/AS, AWPDP, 20 Jan. 1942.
10. Memo for AC Member, JUSSC from C/AS, 14 Feb. 1942.
11. Directive memo for AC/AS, AWPDP from S/AS, 23 Feb. 1942.
12. Ltr., AGO to Gen. Arnold, 20 Jan. 1942.
13. *Ibid.*
14. CCS 41, 16 Feb. 1942; R&R, OCAC Operations to Asst. Exec. for Technical Plans and Coordination, 6 Mar. 1942.
15. R&R, OCAC Operations, as in n. 14; CCS 41, 16 Feb. 1942; History, 67th Fighter Sq., Actv. to 31 Dec. 1943; History, 68th Fighter Sq.
16. USSBS Intr. 516, Maj. Gen. Tatsuhiko Takashima, 29 Nov. 1945; JCCSS-9, 11 Jan. 1942. The Japanese Basic Plan for the conduct of the Pacific war actually listed the conquest of New Caledonia, Fiji, and Samoa as necessary, but these were to follow after the acquisition of Midway. (USSBS [Pacific], Naval Analysis Div., *The Campaigns of the Pacific War*, p. 3.)

17. Ltr., AG to Gen. Patch, AG 381 (1-22-42) MSC-E, 22 Jan. 1942; JCCS-10, Annex No. 2.

18. Narrative of Operations, Americal Division at Guadalcanal, 28 May 1943; ltr., C/S to Adm. King, 20 Jan. 1942, Loading of Transports; unused memo for TAG from WPD, 19 Jan. 1942, Defense of New Caledonia. General Patch reached New Caledonia on 7 March, one week in advance of the arrival of his force. (Memo for TAG from WPD, 7 Mar. 1942, Notification to the Commanding General, POPPY of the Sailing of His Force.)

19. CM-OUT-5181, Marshall to Nacal #50, 26 Apr. 1942; msg., MacArthur to AGWAR #NR 139, 27 Apr. 1942.

20. Ltr., TAG to Gen. Patch, AG 381 (1-22-42) MSC-E, 22 Jan. 1942; History, 67th Fighter Sq.

21. Msg., MacArthur to AGWAR, #NR 139, 27 Apr. 1942; CM-IN-4299, GHQ SWPA to TAG, #AG 752, 16 May 1942.

22. JCCS-10, Annex No. 2.

23. Incl. 1, in ltr., CinC U.S. Fleet to CG AAF, 13 May 1942.

24. *Ibid.*

25. CM-IN-4290. GHQ SWPA to TAG, #AG 752, 16 May 1942.

26. Cominch File A 16-3 (00177), 12 Mar. 1942, incl. 1, in R&R, AFROM to Tactical Sec., 17 Mar. 1942.

27. History, 68th Fighter Sq.; msg., Marshall to CG USAFIA, unnumbered, 16 Mar. 1942.

28. Report, in Joint Board Estimate of U.S. Over-all Production Requirements, 11 Sept. 1941, Sec. IV.

29. JCS 23, 14 Mar. 1942.

30. *Ibid.*

31. JCS 23, Annex "A."

32. JCS 23.

33. Memo for Adm. King from C/S, 17 Mar. 1942.

34. JPS 21/5/D, 7 Apr. 1942.

35. Memo, n.s. and n.d., in JPS 21/7, 18 Apr. 1942.

36. *Ibid.*

37. Col. Merian C. Cooper, Briefing

Officer, First Special Aviation Project, The Doolittle Air Raid on Japan, dtd. 22 June 1942, p. 2; Lt. Col. Samuel L.A. Marshall, Tokyo Raid manuscript, p. 2.

38. CM-OUT-464, Marshall to AM-MISCA, 12 Apr. 1942.

39. Tokyo Raid ms., p. 12; ltr., Lt. Col. Doolittle to Lt. Gen. H.H. Arnold, 28 Mar. 1942.

40. Tokyo Raid ms., p. 16.

41. Cooper report, as cited in n. 37, p. 4.

42. 1st ind. (CO *Enterprise*, Serial 088, 23 Apr. 1942), CO Carriers, Pacific Fleet (CO T.F. 16) to CinCPac Fleet; General Doolittle's Report on Japanese Raid, dtd. 5 June 1942, in AAG K-543.

43. USSBS, Military Analysis Div., *Japanese Air Power*, pp. 9-10; USSBS Intr. 479, Capt. M. Genda, 28-29 Nov. 1945.

44. USSBS Intr. 495, Capt. T. Ohmae, 6 Dec. 1945; Answers to Military Analysis Div. Questionnaire 16, Lt. Cols. T. Shimatani and K. Tanaka, 17 Jan. 1946.

45. Tokyo Raid ms., p. 50.

46. USSBS Memo #Nav 11, 16 Oct. 1945, p. 40.

47. USSBS, *Japanese Air Power*, pp. 9-10.

48. USSBS, *Summary Report (Pacific War)*, pp. 3-4; USSBS, *Japanese Air Power*, pp. 9-10; USSBS, *Campaigns of the Pacific War*, p. 4; USSBS, Intr. 192, Capt. T. Ohmae, 30 Oct. 1945, p. 2; USSBS Intr. 495, Capt. T. Ohmae, 6 Dec. 1945, pp. 2-3.

49. USSBS Intr. 524, Vice Adm. Shigeru Fukudome, 12 Dec. 1945, p. 10.

50. USSBS Intr. 447, Lt. Gen. Kawabe, 26 Nov. 1945; 498, Fleet Adm. Osami Nagano, 30 Nov. 1945; 467, Comdr. Tadashi Yamamoto and Capt. Toshikazu Ohmae, 20 Nov. 1945, p. 10; USSBS, *Campaigns of the Pacific War*, pp. 4-5.

51. USSBS Intr. 498, Fleet Adm. O. Nagano, p. 5.

52. USSBS Intr. 503, Vice Adm. S. Fukudome, p. 37; 467, Comdr. T. Yamamoto and Capt. T. Ohmae, p. 10.

53. ONI Combat Narratives, The Battle of the Coral Sea, pp. 1-2; Navy

- msg., F-35 Navy, CinCPac Fleet, 19 Feb. 1942.
54. USSBS Intr. 503, Vice Adm. S. Fukudome, p. 38; USSBS, *Campaigns of the Pacific War*, p. 3.
55. AAF Historical Study No. 9, The AAF in Australia to the Summer of 1942, p. 118; USSBS Intr. 475, Comdr. Masatake Okumiya, 29 Nov. 1945.
56. Summary of Operations of the 435th Bomb. Squadron, in App. G., History, 435th Bomb. Sq.
57. ONI, Battle of the Coral Sea, p. 9; USSBS Intr. 53, Capt. M. Yamaoka, 19 Oct. 1945.
58. USSBS Intr. 53, Annex A, Capt. M. Yamaoka, 20 Oct. 1945; 46, Comdrs. H. Sekino and Masatake Okumiya, 17 Oct. 1945.
59. History, 90th Bomb. Sq. (L), 25 Sept. 1917-31 Mar. 1944; reconnaissance reports for 4 and 5 May, in Allied Air Forces Operations Reports, 4 Apr. to 31 July 1942. In *The Campaigns of the Pacific War*, page 52, it is stated that no contact with the enemy force occurred until 6 May.
60. History, 3d Bomb. Gp., 1 July 1919-31 Mar. 1944.
61. ONI, Battle of the Coral Sea, pp. 14-16.
62. USSBS Intr. 46, Comdrs. H. Sekino and M. Okumiya; USSBS, *Campaigns of the Pacific War*, p. 52.
63. USSBS Intr. 53, Capt. M. Yamaoka.
64. USSBS Intr. 46.
65. USSBS, *Campaigns of the Pacific War*, p. 53.
66. USSBS Intr. 65 (Sup.), Capt. Yasuji Watanabe, 14 Nov. 1945; CM-IN-3622 (13 May 1942), MacArthur to C/S, #AG 719, 13 May 1942.
67. CM-IN-3622, Melbourne to C/S, #719, 13 May 1942.
68. *Ibid.*
69. Interview with Col. Richard H. Carmichael and members of the 19th Bomb. Gp., 5 Dec. 1942; interview with Lt. Col. Dill Ellis by author, 21 Feb. 1946.
70. Ltr., Gen. Royce to Gen. Har-
- mon, 25 May 1942, in memo for OPD from AC/AS, Plans, 1 July 1942.
71. USSBS Intr. 53, Capt. M. Yamaoka; 444, Capt. Mieno, 26 Nov. 1945.
72. USSBS Intr. 524, Vice Adm. S. Fukudome; 503, Vice Adm. S. Fukudome, pp. 38-39; USSBS, *Campaigns of the Pacific War*, p. 58.
73. USSBS Intr. 192, Capt. T. Ohmae, 30 Oct. 1945; 65, Capt. Y. Watanabe, 15 Oct. 1945; 252, Capt. Y. Toyama, 1 Nov. 1945.
74. USSBS Intr. 524, Vice Adm. S. Fukudome.
75. CM-IN-4577 (17 May 1942), Emmons to C/S, #96, 16 May 1942; Fourth Air Force Historical Study IV-2, Processing Functions and Relations with Alaska, p. 88.
76. ONI Combat Narratives, The Battle of Midway, pp. 2-3.
77. CM-IN-8825 (31 May 1942), Richardson to C/S, #423, 31 May 1942.
78. WPD Weekly Status Maps, AG 061 (4 Sept. 1945). At the end of April these figures were given as 31 heavy bombers, 9 light bombers, 178 pursuit planes, and 34 miscellaneous. (Incl. [JCS 48], Annex to Report by JUSSC, 29 Apr. 1942.) The OPD Status Map of 30 April 1942 listed 32 heavies, 15 mediums, 9 light bombers, 182 pursuit, and 27 miscellaneous.
79. Growth of Heavy and Medium Bombardment Units in the Seventh Air Force, 7 Dec. 1941-31 Aug. 1944, p. 11.
80. Ltr., Brig. Gen. H.C. Davidson to CG Seventh AF, 24 Mar. 1942, cited in Operations of Seventh Air Force, 7 Dec. 1941-13 Nov. 1943, p. 13.
81. Ltr., Col. James A. Mollison, C/S Seventh AF to CG AAF, 8 Apr. 1942, cited *ibid.*, p. 13.
82. Ltr., Gen. Davidson, CG Seventh AF to CG AAF, 13 June 1942, cited *ibid.*, pp. 13-14; CM-IN-3881 (14 May 1943), Emmons to CG AAF, #53, 14 May 1942.
83. JPS 21/7, 18 Apr. 1942.
84. CM-IN-5813 (21 May 1942), Fielder to A/CS, G-2, #191, 21 May 1942.

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85. History, Second Air Force, 7 Dec. 1941-31 Dec. 1942, I, 160; CM-OUT-6011 (28 May 1942), Marshall to CG Haw. Dept., #3975, 28 May 1942; CM-OUT-3526 (15 June 1942), Marshall to CG Haw. Dept., #4307, 15 June 1942. By 20 May General Marshall informed Emmons that two heavy and one medium bombardment squadrons en route to South Pacific bases would be held in Hawaii. (CM-OUT-4119, Marshall to Emmons, 20 May 1942.)

86. Ltr., Gen. Davidson to CG AAF, 13 June 1942, as cited in n. 82; CM-IN-9001 (31 May 1942), Emmons to CSA, #429, 31 May 1942.

87. Ltr., Gen. Davidson to CG AAF, 13 June 1942; memo for G-3 Seventh AF from CG VII Bomber Command, 6 June 1942, cited in Operations of Seventh Air Force, p. 14.

88. ONI, Battle of Midway, p. 5.

89. Memo for G-3 Seventh AF from CG VII Bomber Command, 6 June 1942.

90. Seventh Air Force and the Battle of Midway, 3-6 June, cited in Operations of the Seventh Air Force, p. 15; ONI, Battle of Midway, p. 6.

91. USSBS Intr. 65 (Sup.), Capt. Y. Watanabe, 14 Nov. 1945, p. 6; 530, Rear Adm. Akira Soji, 23 Dec. 1945, p. 2.

92. Ltr., Gen. Davidson to CG AAF, 13 June 1942; ONI, Battle of Midway, p. 7.

93. ONI, Battle of Midway, p. 8; interview with Lt. Col. Ira L. Kimes, USMC, 31 Aug. 1942.

94. See statement of Maj. Gen. George C. Kenney, in Critique of Joint Army-Navy Exercise No. 3, 21 Apr. 1942, Doc. 151, in Fourth Air Force Hist. Study III-2, Defense Plans and Operations, Vol. V; ltr., CG Fourth AF to CG WDC, 12 Mar. 1942, Transfer of the Bomber Command to Naval Control, Doc. 196, *ibid*.

95. USSBS Intr. 530, Capt. Y. Watanabe, 27 Dec. 1945, pp. 19-20; and Capt. Y. Toyama, 14 Jan. 1946, p. 68. The evidence for this hit is not conclusive.

96. USSBS Intr. 252, Capt. Y. Toyama, p. 4; ONI, Battle of Midway, p. 9.

97. USSBS Intr. 530, Capt. Y. Watanabe, 27 Dec. 1945; ONI, Battle of Midway, pp. 16-17; USSBS, *Campaigns of the Pacific War*, p. 59.

98. ONI, Battle of Midway, p. 26; USSBS, *Campaigns of the Pacific War*, p. 63.

99. USSBS Intr. 530, Capt. Y. Watanabe, 27 Dec. 1945, p. 15; USSBS, *Campaigns of the Pacific War*, pp. 59, 63-64.

100. USSBS Intr. 65, Capt. Y. Watanabe; ONI, Battle of Midway, pp. 44-50.

101. CM-IN-4180 (13 June 1942), Emmons to C/S USA, #771, 13 June 1942; msg., Emmons to C/S USA, 12 June 1942, cited in Operations of Seventh Air Force, pp. 19-20.

102. CM-IN-4180 (13 June 1942), Emmons to C/S USA, #771, 13 June 1942; interview with Maj. Gen. O.A. Anderson, 18 Mar. 1945; interview with Maj. Gen. Willis H. Hale, 19 Apr. 1946.

103. Interview with Lt. Col. Ira L. Kimes, p. 11; ltr., Gen. Davidson to CG AAF, 13 June 1942.

104. Ltr., Gen. Hale, CG VII Bomber Command to CG Hq. Haw. Dept. thru CG Seventh AF, 3 June 1942, cited in Operations of Seventh Air Force, p. 21; Hale interview.

105. USSBS Intr. 530, Capt. Michiso Tsutsumi, 26 Dec. 1945, pp. 26, 30.

106. USSBS Intr. 530, Vice Adm. R. Kusaka, 30 Dec. 1945, p. 43. A similar result was attributed to the Marine dive bombers, whose pilots achieved very few hits. (USSBS, *Campaigns of the Pacific War*, p. 60.)

107. Cited in memo for CG AAF from Col. J.R. Deane, Report of Battle of Midway, 4 Aug. 1942.

108. *Ibid*.

109. Adm. King's Report on Battle of Midway, incl. in R&R, AFDMR to AFCAS, 15 Aug. 1942.

110. *Ibid*.

111. R&R, AFAEP to AFDMR, 14 Aug. 1942.

112. USSBS Intr. 503, Vice Adm. S. Fukudome, 9 Dec. 1945.

113. USSBS Intr. 101, Capt. Taisuke Ito, 11 Oct. 1945.
114. *Ibid.*; USSBS, Intr. 97, Comdr. M. Okumiya, 10 Oct. 1945; USSBS, *Campaigns of the Pacific War*, pp. 78-79.
115. ONI Combat Narratives, The Aleutians Campaign, June 1942-Aug. 1943, p. 5.
116. History, Army Air Base, APO 948, 26 Aug. 1941-31 July 1944, pp. 7-8.
117. *Ibid.*, p. 12; History, Eleventh Air Force, p. 141.
118. History, Eleventh Air Force, pp. 139, 142.
119. *Ibid.*, p. 149; Hq. Eleventh AF, FO 2, 1 June 1942, incl. 9, in History, A-3, Eleventh Air Force.
120. History, Army Air Base, APO 948, p. 8.
121. History, 28th Bomb. Gp. (Comp.), 1 Feb. 1940-31 Mar. 1944, p. 13; History, 36th Bomb. Sq., 1 Feb. 1940-31 Aug. 1943.
122. History, Eleventh Air Force, p. 144.
123. *Ibid.*
124. History, 28th Bomb. Gp., p. 28.
125. *Ibid.*, pp. 28-29.
126. USSBS Intr. 97, Comdr. M. Okumiya, p. 2.
127. ONI, The Aleutians Campaign, p. 6.
128. *Ibid.*, pp. 6-7. ONI reports show approximately fifteen fighters in this initial attack, but Japanese records indicate only six fighters reached the target. (USSBS, *Campaigns of the Pacific War*, p. 79.)
129. USSBS Intr. 97, p. 3; History, 11th Fighter Sq., Actv. to 1 Jan. 1944.
130. History, 11th Fighter Sq.; USSBS, *Campaigns of the Pacific War*, p. 79.
131. USSBS Intr. 97.
132. ONI, The Aleutians Campaign, pp. 7-8.
133. History, 11th Fighter Sq., p. 38; USSBS, Intr. 97; ltr., Capt. Milton H. Ashkins, CO, 11th Fighter Sq. to CO Air Forces, Umnak, Alaska, Engagement of Enemy Aircraft, 4 June 1942, incl. E, in History, Army Air Base, APO 948.
134. Ltr., Gen. Butler to CG ADC, n.d., in G-2 Per. Reports; cf. ltr., Gen. Butler to Gen. Arnold, 16 June 1942.
135. History, Eleventh Air Force, p. 150.
136. USSBS Intr. 97.
137. Statement of Col. Eareckson to CG Eleventh AF, 8 June 1942, incl. 168, in History, Eleventh Air Force, App. A.
138. History, Eleventh Air Force, p. 152; USSBS Intr. 97.
139. USSBS Intr. 97; USSBS Memo #Nav 11, Final Report in Answer to Memorandum #11 from the United States Bombing Survey, 16 Oct. 1945, p. 41.
140. ONI, The Aleutians Campaign, p. 8.
141. Ltr., Col. A.W. Marriner, Dir. of Com. to CSigO, 14 Aug. 1942; Combat Summaries, App. F, in AAF Historical Study No. 4, Alaskan Air Defense and the Japanese Invasion of the Aleutians; Fourth Air Force Hist. Study IV-2, I, 102.
142. ONI, The Aleutians Campaign, p. 9. Four PBV's of a total force of twenty were lost in this period. (USSBS, *Campaigns of the Pacific War*, p. 89.)
143. USSBS Intr. 97. Enemy records indicate a loss of seven aircraft in the Dutch Harbor attacks. (USSBS, *Campaigns of the Pacific War*, p. 89.)
144. USSBS Intr. 101, Capt. Taisuke Ito, p. 2; 367, Vice Adm. S. Omori and Capt. R. Arichika, 15-16 Nov. 1945, p. 2; USSBS, *Campaigns of the Pacific War*, p. 81.
145. USSBS Intr. 503, Vice Adm. S. Fukudome, p. 39.
146. *Ibid.*; USSBS Intr. 32, Vice Adm. T. Ozawa, 16 Oct. 1945, p. 8.
147. USSBS Intr. 258, Rear Adm. Toshitane Takata, 1 Nov. 1945, p. 2.
148. USSBS Intr. 65, Capt. Y. Watanabe, 15 Oct. 1945, p. 6.

NOTES TO CHAPTER 13

1. Immediately after the fall of Corregidor, for instance, General MacArthur argued for development of a second front in the Pacific which, in addition to affording a necessary protection for Australia and India, would assist the U.S.S.R. by forcing a Japanese withdrawal from Siberia. (CM-IN-2333 [5-8-42], MacArthur to Marshall, #176, 8 May 1942.)

2. CM-IN-0469 (6-2-42), MacArthur to C/S, #217, 2 June 1942; CM-IN-2264, GHQ SWPA to C/S, #913, 8 June 1942. MacArthur argued that now was a propitious moment to rush forces from the Indian and Atlantic oceans for temporary action against the Japanese. (CM-IN-6409, MacArthur to C/S, #199, 23 May 1942.) Without such additional striking forces and greater security of communications, he opposed a landing on Tulagi which had been suggested by the Navy. (CM-IN-8352 [5-29-42], GHQ SWPA to C/S, #840, 28 May 1942.)

3. Memo for Gen. Twining from Col. Frank Everest, Office of G-3, WDGS, 23 June 1942; draft memo for C/AS from Col. O.A. Anderson, AC/AS, Plans, 25 June 1942. General Marshall was inclined to support General MacArthur's proposals. His staff was working on the logistics for an operation similar to one proposed by MacArthur, and he was preparing to urge the Navy to move two or three carriers into Australian waters and to suggest to the British that they move two or three of their carriers from the Indian Ocean, all to be available for operations against New Britain and New Ireland. (Msg. #204, Marshall to CinC/SWPA, 10 June 1942.) A later development of this plan was that the British units should operate against Timor with the support of army aircraft based in northwestern Australia. This action was to be co-ordinated with an operation in the South Pacific against Tulagi by an American task force including at least two carriers and supported by land-based aviation from northeast Australia, the New Hebrides, and New Caledonia. (CM-OUT-5704 [6-23-42], Marshall to CinC SWPA, #277, 23 June 1942.) General MacArthur informed

General Marshall that air strength in the Southwest Pacific was insufficient for support of operations both to the northeast and to the northwest. (CM-IN-7976 [6-24-42], GHQ SWPA to AGWAR, #248, 24 June 1942.)

4. CM-OUT-5704 (6-23-42), Marshall to CinC/SWPA, #277, 23 June 1942; memo for C/S from Brig. Gen. T.T. Handy, AC/S, OPD, 24 June 1942, in OPD 381 SWPA. See also other sources cited in preceding note.

5. Sources in n. 3; CM-OUT-6596 (6-26-42), Marshall to CinC/SWPA, #289, 26 June 1942; CM-OUT-7366 (6-28-42), Marshall to MacArthur, #300, 28 June 1942; CM-OUT-7501 (6-29-42), Marshall to CinC/SWPA, #306, 29 June 1942; memos for Adm. King from Marshall, 26 June 1942, and for C/S from CinC U.S. Fleet, 26 June 1942, both in OPD 381 SWPA. MacArthur expressed a fear that the Navy's proposals would reduce the Army's functions to subsidiary ones and implied that army forces would be used largely for garrisoning the islands. (CM-IN-9329 [6-28-42], MacArthur to Marshall, #254, 28 June 1942.)

6. CM-IN-7976 (6-24-42), GHQ SWPA to AGWAR, #248, 24 June 1942.

7. Directive quoted in War Diary of ComSoPac for 4 July 1942. The agreement was a compromise between the MacArthur view that the campaign should be co-ordinated under his command and the view of the Navy that the entire operation should be directly under the Joint Chiefs of Staff, but with Admiral Ghormley in immediate command. There was still some hope that British carriers might be available, but in view of the desperate situation in the Middle East, this was considered uncertain. (CM-IN-0088 [7-1-42], MacArthur to C/S, #261, 1 July 1942; CM-OUT-0677 [7-3-42], Marshall to MacArthur, #394, 3 July 1942; CM-IN-1306 [7-4-42], MacArthur to C/S, #C21, 4 July 1942.)

8. Directive quoted in War Diary of ComSoPac for 4 July 1942. It is interesting to note that after their first conference on the proposed offensive, both "General MacArthur and Admiral

Ghormley recommended that the initiation of the offensive be deferred" because of insufficient resources. (USSBS, *Employment of Forces under the Southwest Pacific Command* [Feb. 1947], p. 10.)

9. Enemy statistics from Allied Air Forces and RAAF Intelligence Summaries; Allied statistics from cable status reports. See also Histories, 49th and 35th Fighter Gps.

10. CM-IN-2114 (4-8-42), Australia to TAG, 8 Apr. 1942; interview with Capt. Charles L. Marburg, 3 Nov. 1942; interview with Capt. Carey L. O'Brien, 5 Dec. 1942; Lt. Gen. George Brett report, Air Operations in Australia, Sum. J; unrecorded interview with Maj. M.J. Keane, Mar. 1944; Eric Feldt, *The Coast-watchers* (New York, 1946).

11. RAAF Intel. Sums.; History, 49th Fighter Gp.

12. History, 49th Fighter Gp.; History, V Fighter Command.

13. Memo for C/S from Maj. Gen. Robert C. Richardson, Jr., Report #5, 9 July 1942; Brett report; CM-IN-7277 (5-26-42), GHQ SWPA to AGWAR, #811, 26 May 1942. It will be recalled that two squadrons of the 8th Fighter Group equipped with P-39's had reached Port Moresby by 1 May. (See chap. 11.)

14. RAAF and Allied AF Intel. Sums.; cable status reports; Histories, 39th and 40th Sqs. and V Fighter Command. The heaviest raid of this period damaged water mains, burned fuel dumps, and destroyed two P-39's and one P-400 on the ground.

15. See sources in n. 14 and CM-IN-6849 (7-20-42), GHQ SWPA to CG AAF, #A119, 19 July 1942. At least twenty P-39's and P-400's were destroyed during June and eight more in July by enemy action.

16. Osmar White, *Green Armour* (New York, 1945), p. 148; msg., Brett to NE Area, Townsville, 11 May 1942; msg., Hq. USA Townsville to Hq. USAFIA, 12 May 1942; msg., NE Area, Townsville to Hq. Allied AF, 14 May 1942; Histories, 374th Troop Carrier Gp., 3d Bomb. Gp., 13th and 90th Bomb. Sqs.;

CM-IN-0701 (7-2-42), GHQ SWPA to C/S, #27, 3 July 1942; CM-IN-0925, GHQ SWPA to C/S, #C15, 3 July 1942.

17. Histories, 3d and 27th Bomb. Gps.; cable status reports.

18. Histories, 27th Bomb. Gp. and 13th Bomb. Sq.; Consolidated Statistical Report, Materiel Command, Sec. VI, 30 June 1942; cable status reports.

19. RAAF and Allied AF Intel. Sums., specifically #14, 3 July 1942, p. 6; Keane interview; Histories, 13th and 90th Sqs.

20. *Ibid.*; RAAF and Allied AF Intel. Sums. During this same period and in these same bomber missions, Allied crews claimed twenty enemy fighters shot down.

21. Histories, 8th Photo Sq., 435th Bomb. Sq., and 3d Gp.; interview with Maj. Frank P. Bostrom, 5 Dec. 1942; cable status reports.

22. Interview with Lt. Col. W.F. Coleman by author, 21 June 1946.

23. RAAF and Allied AF Intel. Sums.

24. Cable status reports; Bostrom interview; Sec. of War's Conference, 18 May 1942; AFDAS to AFAEP, 14 May 1942.

25. See, for example, General Arnold's undated memo to General Marshall in regard to JCS 48, and AAF Reference History No. 1, The AAF in the South Pacific to October 1942.

26. Enemy Order of Battle, from RAAF and Allied AF Intel. Sums.; other statistics from cable status reports. It should also be pointed out that the Japanese had no four-engine bombers for offensive missions.

27. Thus the flow of aircraft was hardly providing the supposedly established wastage of 20 per cent a month. (Cable status reports; CM-OUT-7532 [6-29-42], Arnold to CinC/SWPA, #308, 29 June 1942.)

28. Lt. Col. William J. Kennard, Report on Philippine and Australian Activities, 14 Nov. 1942.

29. Coleman interview; interview with members of 19th Bomb. Gp., 5 Dec. 1942; statement of Col. William Hipps to author; Kennard report; Richardson and

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Brett reports; CM-IN-6753 (5-24-42), MacArthur to C/S, #798, 24 May 1942.

30. See sources in n. 29.

31. CM-IN-5228 (7-15-42), GHQ to C/S #C110, 15 July 1942; interview with Maj. Tom A. Montgomery, in History, ASC in SWPA; Hq. U.S. Army Air Services to CG AAF, 7 July 1942, *ibid.*; CM-IN-5037 (7-15-42), GHQ to CG AAF, #89, 15 July 1942; CM-IN-0998 (7-3-42), GHQ to CG AAF, #A15, 3 July 1942; interview with Capt. Vincent L. Snyder (19th Bomb. Gp.).

32. It should be noted that General MacArthur had felt as early as May that his air force could be strengthened by reorganization. Since this reorganization did not begin until August 1942, it will be discussed in a subsequent volume. (Msg., Arnold to CG USAFIA, 10 May 1942; CM-IN-8604 [6-26-42], GHQ SWPA to AGWAR, #74, 26 June 1942; CM-IN-9902 [6-30-42], GHQ SWPA to AGWAR, #260, 30 June 1942.)

33. CM-IN-1697 (8-5-42), MacArthur to C/S, 3 Aug. 1942.

NOTES TO CHAPTER 14

1. History, Hq. Tenth Air Force, 1942; memo for C/S from AAF Hq., 20 Feb. 1942; CM-OUT-29, AGWAR to Brereton, #AF 2/442, 25 Feb. 1942; CM-OUT, AGWAR to Brereton, #AF 3/7, 1 Mar. 1942; CM-IN, Brereton to Arnold, 6 Mar. 1942.

2. The road from Haiphong, Indo-China, to Yunnan was closed by the Vichy government in 1940 under pressure from the Japanese. (Edward R. Stettinius, Jr., *Lend-Lease, Weapon for Victory*, p. 111.)

3. *Ibid.*, p. 109.

4. Instructions given General Clagett may be found in ltr., C/S to Brig. Gen. H.G. Clagett, Philippine Dept., 29 Mar. 1941.

5. For formation and implementation of the policy of air aid to China, see AAG 000-800, India-China and 450, India-China; also, n. 4, in AAF Historical Study No. 12, The Tenth Air Force, 1942, chap. i.

6. Daniel Arnstein, Marco Hellman, and Harold Davis, traffic and trucking experts, reached Chungking in July. John Baker, another American, was made administrator of the Burma Road. Largely as a result of their efforts the tonnage leaving Lashio monthly for China was increased from 4,000 early in 1941 to 15,000 by November. This included gas used by the trucks en route. (Stettinius, *Lend-Lease*, pp. 111 ff.)

7. *Ibid.*, p. 116; memo for C/S by Brig. Gen. L.T. Gerow, Acting AC/S, WPD, 26 Aug. 1941.

8. For the relationship that the Magruder mission was to bear to Chennault's AVG, see memo for Lauchlin Currie from Oscar Cox, Lend-Lease Administration, 28 Nov. 1941.

9. Claire L. Chennault, "Role of Defensive Pursuit," *Coast Artillery Journal*, Nov.-Dec. 1933, pp. 411-17; Jan.-Feb. 1934, pp. 7-11; Mar.-Apr. 1934, pp. 87-93.

10. Stettinius, *Lend-Lease*, p. 115.

11. See above, n. 5.

12. Memo for C/S from Gen. Spaatz, C/AS, 3 Dec. 1941.

13. Army Air Force Study Pertaining to Proposed Reinforcement of China with Army Air Force Units for the Purpose of Assisting the Chinese to Resist the Possible Japanese Attack Against Kunming, 20 Nov. 1941.

14. Memo for C/S from Gen. Spaatz, C/AS, 3 Dec. 1941.

15. Information on AVG operations has been gathered from many fragmentary sources such as cable messages (British and American), letters, diaries, interviews, and popular books. No official source exists, but it is believed that the material included here is as accurate as it has been practicable to make it without a far more extensive study than is appropriate for this work.

16. British msg. #W200357, ABDA-COM (from Wavell) to War Office, 26 Jan. 1942; Brit. msg. #DBA 11, CCS to ABDACOM, 6 Feb. 1942.

17. Brit. msg. #77801 and #78144, War Office to Brit. Army Staff, Washington, 22 and 24 Mar. 1942; Brit. msg. #78310, GOC BURMA to Brit. Army

Staff, Washington, 25 Mar. 1942. Also, see popular accounts of AVG.

18. CM-IN, Magruder to AGWAR, #AMMISCA 161, 4 Jan. 1942; CM-OUT-0046, Marshall to Brereton, #93, 1 Apr. 1942; memo for AS/W John J. McCloy from Brig. Gen. Gordon P. Saville, Dir. of Air Defense; memo for Gen. Arnold from Lt. Col. H.A. Halverson, 3 Feb. 1942; memo for AC/S, WPD from AFDMR.

19. Col. John Y. York, Jr., Report on Planes for AVG and Chinese, 6 Mar. 1942; Maj. Paul G. Pennoyer, Report on Planes for China and AVG, 1 Apr. 1942; CM-OUT-3268, Arnold to Marshall, #362, 17 Apr. 1942.

20. CM-IN, GHQ Java to TAG, sgd. Brett, #ABDA 448 A, 18 Feb. 1942; CM-IN, Brett to AGWAR, 10 Feb. 1942.

21. ABC-4/9, 10 Jan. 1942.

22. Memo for AC/S, WPD from AFDMR, 18 Mar. 1942; memo for AAG from Col. H.L. George, AC/AS, AWP, 23 Feb. 1942; R&R, Maj. Gen. M.F. Harmon, C/AS to Col. Shumacker, 17 Mar. 1942.

23. CM-IN, Brereton to Arnold, #89, 18 Mar. 1942; History, Hq. and Hq. Sq., Tenth Air Force.

24. Histories, 51st Service Gp., Hq. Tenth Air Force, 51st Fighter Gp., 7th Bomb. Gp., 436th Bomb. Sq.; CM-IN, Brereton to AGWAR, #112, 28 Mar. 1942; CM-IN, Brereton to Arnold, #89, 19 Mar. 1942.

25. Memo for C/AS from Col. H.A. Craig, 4 Mar. 1942; CM-OUT-99, Arnold to Brereton, #AAF PC 42, 2 Apr. 1942; History, 59th Service Sq., 1941-42.

26. CM-OUT-57, Ulio to Brereton, #AAF RC 165, 20 Mar. 1942; CM-IN-2400, Brereton to AGWAR, #Aquila 1724, 8 June 1942; Lt. Col. John E. Barr, Report on P-40 Mission, Special Project 157, 19 June 1942, in History, Hq. Tenth Air Force, 1942.

27. Barr report.

28. Interview with Brig. Gen. Clinton W. Russell, 4 June 1942; CM-IN, Brereton to Arnold, #AMSEG 516, 2 Mar. 1942.

29. CM-OUT, AGO to Wheeler, 3 Mar. 1942.

30. Histories, Hq. Tenth Air Force, 51st Service Gp., 51st Fighter Gp., 7th Bomb. Gp., 436th Bomb. Sq.; Russell interview.

31. CM-IN, Brereton to Arnold, 6 Mar. 1942; Supplies and Services to be Rendered to USA Forces in India, record of meeting held 22 Mar. 1942, in Ninth AF, Papers Relating to USAAF in India, 1942.

32. The mission was composed of Henry F. Grady, H.E. Beyster, Dirk Dekker, A.W. Herrington, and Frank A. Waring. They arrived at New Delhi on 17 April and departed from Karachi 22 May. (A Survey of India's Industrial Production for War Purposes, Report of the American Technical Mission to India [hereinafter cited as Grady report], submitted to the governments of India and the United States, August 1942.)

33. CM-IN, ABDACOM to AGWAR, #4 ST, 19 Feb. 1942; CM-IN, Brereton to Arnold, #Aquila 83, 15 Mar. 1942; CM-IN, Brereton to AGWAR, #Aquila 5, 30 Mar. 1942.

34. CM-IN, Brereton to Arnold: #Aquila 83, 15 Mar.; #Aquila 19, 26 Mar.; and #Aquila 24, 18 Mar. 1942; CM-IN, Brereton to AGWAR, #Aquila 5, 30 Mar. 1942; interview with Col. Homer L. Sanders (Air Room), June 1943; CM-IN, ABDACOM to AGWAR, 37 DX, 17 Feb., and #17, 19 Feb. 1942.

35. CM-IN-I.B. 70, Brereton to AGWAR, #Aquila 63, 4 Mar. 1942; CM-IN, Brereton to Arnold, #Aquila 1, 26 Mar. 1942; CM-IN, Brereton to AGWAR, #Aquila 131, 28 Mar. 1942; memo for C/AS from O.L. Ferson, AFROM, 23 Apr. 1942.

36. CM-IN, Brereton to AGWAR, #Aquila 64, 4 Mar. 1942; CM-IN, Karachi to Arnold, #618, 29 Apr. 1942.

37. CM-IN, Brereton to Arnold, #AMSEG 516, 2 Mar. 1942; CM-OUT-35, Arnold to Brereton, #AF 3/89, 5 Mar. 1942; memo for Chief, WPD, WDGS from Arnold, 24 Mar. 1942; History, X Air Force Service Command, 1942.

38. CM-OUT-32, Arnold to Brereton, #AF 3/53, 4 Mar. 1942.

39. Minutes of meeting held in Defense Dept. Comm. Room, 21 Mar. 1942, in Ninth AF, Papers Relating to the USAAF in India, 1942; minutes of second meeting of the Administrative Planning Comm. held at Air Hq. (Delhi), 22 Mar. 1942, *ibid.*; CM-IN-0578, Brereton to AGWAR, #Aquila 696, 3 May 1942.

40. Ltr., Brig. Gen. C.V. Haynes to Lt. Col. Samuel T. Moore, historian, Tenth AF, 20 Apr. 1943, in History, India-China Ferry Command, 1942. Colonel Haynes had been told by General Arnold that he would command a bombardment group in India, and he was somewhat disappointed at his first assignment. (Ltr., Gen. Arnold to Col. Haynes, 21 Feb. 1942.)

41. History, India-China Ferry Command; CM-IN-7009, Brereton to AGWAR, #Aquila 549, 26 Apr. 1942.

42. History, India-China Ferry Command.

43. CM-IN-1701, Brereton to AGWAR, #Aquila 1700, 9 June 1943.

44. In addition to regular duty, some of the men served as guards to prevent sabotage of the aircraft. (History, India-China Ferry Command; ltr., Capt. A.I. Boyer to Col. Robert F. Tate, 6 May 1942.)

45. A-2 Summary File, 7 Apr. 1942.

46. CM-OUT-0947, Marshall to Brereton, #113, 6 Apr. 1942.

47. A-2 Summary File, 7 Apr. 1942.

48. *Ibid.*, 18 Apr. and 2 May 1942; CM-IN-4583, Brereton to Arnold, #Aquila 356, 17 Apr. 1942.

49. A-2 Summary File, 5, 6, and 9 May 1942; CM-IN-1663, Brereton to AGWAR, #Aquila 754, 6 May 1942; CM-IN-1708, Brereton to AGWAR, #Aquila 814, 7 May 1942.

50. A-2 Summary File, 12, 14, 17, and 27 May 1942; CM-IN-6078, Naiden to AGWAR, #Aquila 3134 L, 18 July 1942.

51. The civilian airline pilots were accustomed to carrying a load of 2,500 pounds. Army pilots were flying 6,000 pounds into Dinjan and 5,000 pounds into

China. A compromise of 4,000 pounds was reached for the flight to China, but Colonel Haynes flew 7,200 pounds eastward and a CNAC pilot brought 6,920 pounds from Kunming to Dinjan. Haynes states that one plane hauled seventy-five passengers out of Burma. (History, India-China Ferry Command; interview with Albert E. Nelson, Bendix rep., 24 June 1943; CM-IN, Aquila to AGWAR, #1135, 19 May 1942.)

52. History, India-China Ferry Command.

53. CM-IN-2821, AMMISCA to AGWAR, #3, 10 May 1942; CM-IN-3536, Aquila to AGWAR, 13 May 1942; CM-IN-7262, Stilwell to AGWAR, #AMMISCA 62, 26 May 1942.

54. CM-IN-6689, Brereton to Arnold, #Aquila 2172, 21 June 1942; History, India-China Ferry Command.

55. CM-OUT-0947, Marshall to Brereton, #113, 6 Apr. 1942.

56. CM-IN-7661, Stilwell to AGWAR, #AMMISCA 610, 29 Apr. 1942.

57. Stilwell and others in Chungking continued to warn the War Department of the suspicion and distrust that the Chinese felt toward the British. (CM-IN-4540, Stilwell to AGWAR, #AMMISCA 62, 17 Apr. 1942; CM-IN-4903, Stilwell to AGWAR, #AMMISCA 540, 18 Apr. 1942.)

58. CM-OUT-3919, Marshall to Aquila, #192, 21 Apr. 1942; CM-IN-6405, Brereton to AGWAR, #Aquila 496, 24 Apr. 1942; CM-IN-6746, Brereton to AGWAR, #Aquila 541, 25 Apr. 1942. As early as the breakup of the ABDA Command in Java, AAF officers had themselves been apprehensive of RAF control in India. (CM-IN, Java to AGWAR, #2, 20 Feb. 1942; CM-IN-72, ABDACOM to AGWAR, #492, 21 Feb. 1942; CM-OUT, Arnold to Brereton, #AF 2/473, 26 Feb. 1942; minutes of second meeting of the Administrative Planning Comm., as cited in n. 39; memo for C/S by AAF Hq., 20 Feb. 1942; ltr., Arnold to Haynes, 21 Feb. 1942; ltr., Brereton to Arnold, 6 Mar. 1942.)

59. CM-IN-7661, Stilwell to AGWAR, #AMMISCA 610, 29 Apr. 1942;

CM-IN-0535, Gruber to AGWAR, #AMMISCA 630, 3 May 1942; CM-IN-2209, Brereton to AGWAR, #Aquila 736, 8 May 1942; CM-IN-1205, Stilwell to AGWAR, #Aquila ZMR NR, 5 May 1942.

60. CM-OUT-5022, Marshall to Stilwell, #713, 24 May 1942; CM-IN-7037, Stilwell to Marshall, #AMMISCA NR 61, 25 May 1942.

61. CM-IN, Brereton to Arnold, #Aquila 89, 17 Mar. 1942; CM-OUT-57, Ulio to Brereton, #AAF RC 165, 20 Mar. 1942; CM-OUT-1676, Marshall to Brereton, #323, 4 May 1942.

62. CM-IN, Brereton to AGWAR, #Aquila 131, 28 Mar. 1942.

63. President Roosevelt had approved the induction as early as 18 December 1941, contingent upon approval of the Generalissimo. (Memo for AS/W John J. McCloy from Brig. Gen. Gordon P. Saville, Dir. of Air Defense; CM-IN, Magruder to AGWAR, #AMMISCA 161, 4 Jan. 1942; CM-IN-0629, Chungking to AGWAR, #442, 3 Apr. 1942; memo for Gen. Arnold from Lt. Col. H.A. Halverson, 3 Feb. 1942; memo for AC/S, WPD from AFDMR, 18 Mar. 1942; memo for AFRIT from WPD, 20 Mar. 1942; memo for Maj. Sigourney from Lt. Col. R.J. Handy, Asst. Chief, AFPMP, 23 Mar. 1942.)

64. CM-IN-2209, Brereton to AGWAR, #Aquila 736, 8 May 1942; CM-OUT-2037, Marshall to Aquila, #332, 10 May 1942.

65. CM-IN-5592, Brereton to AGWAR, #438, 21 Apr. 1942; CM-OUT, Marshall to Aquila, #220, 23 Apr. 1942.

66. CM-IN-7824, Stilwell to AGWAR, #AMMISCA 73, 28 May 1942. Brereton was later told by Marshall that HALPRO would be assigned to the Tenth Air Force, but the Chief of Staff gave no indication as to when the assignment would be made. (CM-OUT-4614, Marshall to Stilwell and Brereton, #584, 19 June 1942.)

67. CM-IN, Magruder to AGWAR, #AMMISCA 161, 4 Jan. 1942; CM-OUT-0046, Marshall to Brereton, #93, 1 Apr. 1942; CM-IN-0629, AMMISCA to AG-

WAR, #442, 3 Apr. 1942; minutes of Administrative Planning Conference held at Air Hq. (Delhi), 15 Mar. 1942, in Ninth AF, Papers Relating to the USAF in India, 1942; CM-IN-5611, AMMISCA to AGWAR, #831, 8 June 1942; CM-IN-7824, Stilwell to AGWAR, #AMMISCA 73, 28 May 1942.

68. Ltr., Brereton to Arnold, 24 June 1942; CM-IN-5194, Bissell to AGWAR, sgd. Stilwell, #AMMISCA 707, 19 May 1942; interview with Lt. Col. John Allison, 3 July 1943; interview with Noel R. Bacon, 22 Apr. 1942; interview with Maj. A.J. Baumler, 24 Mar. 1943; talk by Col. M.C. Cooper in Gen. Johnson's Staff Meeting, 23 Dec. 1942, sgd. by Maj. H.C. Lint; interview with Maj. Marvin Morton, 16 Nov. 1943; talk by Col. E.C. MacMorland, Ord. Dept., 12 Feb. 1943; interview with Col. Homer L. Sanders, June 1943; *New York Times*, 27 and 28 June 1942.

69. History, 341st Bomb. Gp., 1942-43; History, 11th Bomb. Sq., 4 May 1942-31 May 1943; History, India-China Ferry Command.

70. Histories, China Air Task Force, 341st Bomb. Gp., and 11th Bomb. Sq.

71. SO 64, Hq. American Army Forces, China, Burma, and India, in History, USAAF India-Burma Sector, China-Burma-India Theater; unrecorded interviews by author with Col. C.A. Snow, 12 May 1944, and Maj. Gen. Clayton L. Bissell, 19 May 1944; Sanders interview; notes taken during conference between Cols. Robinson, Wyman, and Pope, 14 July 1942, at Chungking, in History, USAAF India-Burma Sector; interview with George L. Paxton, 28 Aug. 1942; interview with Albert E. Nelson, Bendix rep., 24 June 1943; ltr., Arnold to Chennault, 6 Nov. 1942; CM-IN-1758, Chungking to AGWAR, #251, 6 July 1942.

72. Interview with Maj. George MacMillan, 5 Nov. 1942; interview with Col. Robert L. Scott, 30 Apr. 1943; *New York Times*, 3 Oct. 1942; ONI Weekly, No. 24, 7 and 8 July 1942; CM-IN-1758, Mayer to AGWAR, 6 July 1942.

73. R&R, Gen. George, ATC to AC/AS, OC&R, 14 June 1942.

74. CM-IN-2672, Brereton to AGWAR, #Aquila 239, 10 Apr. 1942; CM-OUT, Marshall to Brereton, #136, 10 Apr. 1942.

75. Bissell interview; CM-IN-4990, Brereton to Arnold, #393, 19 Apr. 1942.

76. CM-OUT-195, Arnold to Stilwell, #AAF PC 631, 21 Apr. 1942.

77. History, India-China Ferry Command.

78. See AAF Historical Study No. 12, The Tenth Air Force, 1942, App. 2.

79. History, 3d Air Depot, 1942.

80. History, 59th Service Sq.; History, Hq. X Air Force Service Command, including ltrs., Brereton to Air Marshal Sir R.E.C. Peirse, 1 May 1942, and Peirse to Brereton, 17 May 1942.

81. History, Hq. X Air Force Service Command.

82. Ltr., Brereton to Peirse, 1 May 1942.

83. A-2 Summary File, 27 May 1942; CM-IN-8353, Aquila to AGWAR, #1407, 29 May 1942.

84. A-2 Summary File, 30 May 1942; CM-IN-8690, Aquila to AGWAR, #1476, 30 May 1942.

85. General Brereton was probably exaggerating when he stated that all the heavy bombers were out of commission, for when orders came for him to take them to the Middle East most of the planes were flown out. They were certainly not in first-class combat condition, but at least a few must have been flyable when Brereton's report was sent. (CM-IN-2696, Brereton to Arnold, #Aquila 1755, 9 June 1942; CM-IN-4475, Brereton to AGWAR, #Aquila 1922, 14 June 1942; CM-IN-6689, Brereton to Arnold, #Aquila 2172, 21 June 1942.)

86. A-2 Summary File, 1 June 1942; CM-IN-0298, Aquila to AGWAR, #1508, 1 June 1942.

87. A-2 Summary File, 7 June 1942; History, 436th Bomb. Sq.

88. Mil. Intel. Service, WDGS, War Department Survey of India (hereinafter cited as War Department Survey), 15 July 1943, p. 169.

89. Grady report, as cited in n. 32;

CM-IN-5206, Wheeler to Somervell, #1965, 16 June 1942; CM-OUT-245, AFAFC to Aquila, #AAF PC 869, 26 Apr. 1942; CM-IN-6937, Osmun to MILID, #380, 20 July 1942.

90. Grady report; War Department Survey; interview with Maj. Marvin Morton, 16 Nov. 1943; Research and Analysis Br., OSS, Strategic Survey of Northeastern India, 19 Jan. 1943; British Empire Sec. Report No. 3, Road Transport from Western India to Calcutta and Assam, 9 Mar. 1942.

91. Grady report; War Department Survey; Hq. U.S. Air Forces in India and China, Tenth AF, India, Intel. Extracts.

92. Grady report.

93. Morton interview; ltr., Brereton to Arnold, 6 Mar. 1942; CM-IN-2569, Naiden to AGWAR, #Aquila 2802, 8 July 1942; minutes of third meeting of Administrative Planning Comm. held at Air Hq. (Delhi), 30 Mar. 1942.

94. Minutes of Administrative Planning Conference held at Air Hq. (Delhi), 15 Mar. 1942; memo for C/AS from Lt. Col. H.A. Halverson, 20 Jan. 1942; CM-IN, Brereton to Arnold, #AMSEG 516, 2 Mar. 1942; CM-OUT, Arnold to Brereton, #AF 3/80, 5 Mar. 1942; memo for Chief, WPD from Arnold, 24 Mar. 1942.

95. War Department Survey; Grady report; *New York Times*, 10 Nov. 1943; CM-IN-3907, Osmun to MILID, #130, 12 May 1942.

96. CM-IN-7202, Brereton to AGWAR, #Aquila 2112, 22 June 1942.

97. CCS 39/1, 14 Mar. 1942.

98. CM-OUT-5700, Marshall to Brereton, #618, 23 June 1942.

99. CM-OUT-4614, Marshall to Brereton, #584, 19 June 1942; CM-OUT-6568, Arnold to Brereton, #648, 26 June 1942; CM-OUT-2279, Arnold to Stilwell, #62, 9 July 1942.

100. CM-IN-8133, Brereton to Marshall, #Aquila 2319, 25 June 1942.

101. History, 9th Bomb. Sq., 1942.

102. CM-IN-05887, Bissell to AGWAR, #Aquila 5935, 14 Oct. 1942.

NOTES TO CHAPTER 15

1. AAFAC Monthly Bulletin, *passim*.
2. History, First Air Force, III, Pt. 10, 7-10; ltr., Maj. Gen. G.C. Brant to Gen. Arnold, 30 Oct. 1941; ltr., Arnold to Brant, 27 Nov. 1941; ltr., Adm. Harold R. Stark to C/S U.S. Army, 8 Nov. 1941.
3. Office of Naval Intelligence, The Conduct of the War at Sea, 15 Jan. 1946. This is a translation of an essay by Adm. Karl Doenitz.
4. Excerpts from Eastern Sea Frontier War Diary, Dec. 1941, Tab IH, in Three Historical Essays Relating to Army Antisubmarine Activities (hereinafter cited as Three Essays), 26 Apr. 1944; Report by Maj. A. Standish to Secretary of War for Air, 1 Dec. 1943, p. 3. Figures are taken from U.S. Fleet Antisubmarine Bulletin, June 1943, but cf. Standish report, p. 5. See also memo for CG AAFAC from Maj. W. Jackson, Asst. A-2, AAFAC, 7 Mar. 1943, Tab II, in Three Essays.
5. See especially plan attached to memo for CG AAF from Col. Lyon and Col. Williamson, 27 Feb. 1943; AAFAC Liaison Office, Proposed Reorganization of ASW Forces, 21 Jan. 1943; Edward L. Bowles, The Acute Problem of Oceanborne Transport and Supply, special report for S/W, 1 Mar. 1943. The subject will be discussed in Volume II of this history.
6. Reference data attached to memo for Marshall from Arnold, 21 Feb. 1942, in Plans file III-B, Bk. 1. Reference is here made to Act of 5 June 1920 (41 Stat. 954) as amended by Sec. 1, Act of 2 July 1923 (44 Stat. 780).
7. Joint Action of the Army and Navy, 11 Sept. 1935.
8. See correspondence in Plans file III-R, Bk. 1 under dates November and December 1941 for discussion of proposed revision of Joint Action and RAINBOW No. 5.
9. History, I Bomber Command; file of correspondence and orders concerning 100-mile limit, in special file of Brig. Gen. Frederic H. Smith, Jr.
10. Ltr., Comdr. North Atlantic Naval Coastal Frontier to C/NO, 22 Dec. 1941, Tab IA, in Three Essays. Cf. Standish report, p. 3.
11. Standish report, p. 6. The convoy system was inaugurated formally on 15 May 1942. (Digest of ESF War Diary, Tab IN, in Three Essays.)
12. ESF War Diary, Dec. 1941 and Jan. 1942, quoted in Tab IB, D, and E, Three Essays; ltr., Comdr. NANCEF to COMINCH, 14 Jan. 1942, Tab IC, in Three Essays.
13. Col. D.R. Lyon, History and Organization of the Army Air Forces Anti-Submarine Command, n.d.; AAFAC Monthly Antisubmarine Summary, Jan. 1943, p. 32. According to this account, the squadrons principally involved were the 20th, 43d, and 96th Bombardment squadrons.
14. When activated on 5 September 1941, the I Bomber Command consisted of a headquarters squadron, three heavy and one medium bombardment groups, a similar number of reconnaissance squadrons, and a single pursuit group. (Lyon history.)
15. Ltr., Comdr. NANCEF to COMINCH, 14 Jan. 1942, Tab IC; ESF War Diary, Tabs IF and IG, in Three Essays.
16. Lyon history; Standish report, p. 2.
17. Ltr., Hq. I BC to CG First Air Force, 14 Jan. 1942; Col. C.A. McHenry, The Antisubmarine Command of the Army Air Forces, 13 Oct. 1943, prepared for release in the *Army and Navy Journal*.
18. Draft history, I BC. Cf. AAFAC file 111.0 and list prepared by historian, I BC.
19. AAFAC Historical Report on Training.
20. Draft history, I BC.
21. *Ibid.*; report by W/C O.F. Canning, RAF to Capt. J.T.G. Stapler, USN, Col. H.D. Smith, First AF, and Lt. Col. R.B. Williamson, I BC, 17 Feb. 1942. See also file 115.51.
22. Standish report.
23. *Ibid.*; draft history, I BC.
24. See sources in n. 23; also AAF

Historical Study No. 19, Civilian Volunteer Activities in the AAF.

25. Joint Action, chap. ii, par. 8 (a) and (b); msg., COMINCH and C/S to CG EDC, 25 Mar. 1942; ltr., CG EDC to Comdr. ESF, 28 Mar. 1942.

26. Ltr., Brig. Gen. Westside T. Larson to Gen. Bradley, 19 Mar. 1942. Cf. draft history, I BC.

27. See sources in n. 4.

28. Correspondence in AAFAC file, Gulf Task Force Organization. See especially, ltr., Arnold to Maj. Gen. W.H. Frank, 31 May 1942; ltr., Bradley to CG I BC, 26 May 1942; ltr., TAG to CG's, Southern Defense Command and Third AF, 3 July 1942; ltr., Hq. Gulf Task Force to The Air Inspector, 2 Oct. 1942.

29. See sources in n. 28; also ltr., Hq. Third AF to CG AAF, 8 June 1942. Cf. History, Third Air Force, Defense Activities, 1941-44, p. 36.

30. Assessment of Attacks, in AAFAC file 557. See also n. 38 below.

31. Ltr., Hq. Advance Echelon, I BC to all tactical comdrs., 19 Jan. 1942, in AAFAC file, I Bomber Command Operations, Procedure. See also other correspondence in same file.

32. AAFAC file, I Bomber Command Operations, Procedure.

33. *Ibid.*, *passim*.

34. *Ibid.*, *passim*; Information Bulletin 13, Hq. I BC, 31 July 1942.

35. Ltr., Comdr. ESF to all task group comdrs., 24 Sept. 1942.

36. Three Essays, Tab I N.

37. AAFAC file, I Bomber Command Operations, Convoy Escort. See especially, ltr., Hq. Seventh Naval Dist. to AS/W for Air, 13 May 1942; ltr., Hq. I BC to CG's EDC and First AF, 29 May 1942.

38. Standish report; AAFAC file 557 (the assessments herein contained have been checked with those printed in U.S. Fleet Antisubmarine Bulletin to Dec. 1944). Authority for the "kill" of 7 July comes from C/NO, German, Japanese, and Italian Submarine Losses, World War II, which is a final summary of all

certain evidence from all Allied and enemy sources.

39. Standish report. See also charts in AAFAC Monthly Intel. Sum., Nov. 1942, pp. 8-9.

40. Standish report; Antisubmarine Warfare Operations Research Group Memo 20, Analysis of U.S. Aircraft Attacks on U/Boats, 7 Dec. 1942, p. 4. In this connection it should be noted that several attacks reported by I Bomber Command are not included here and that of the total attacks listed, half, or a significantly larger proportion, of radar contacts were made by Army planes.

41. Doenitz, The Conduct of the War at Sea.

42. Estimated at 859,000 tons for November as compared with 575,886 for October. Monthly Intel. Sum., Nov. and Dec. 1942.

43. History, First Air Force.

44. History, Caribbean Air Force, 8 May 1941-6 Mar. 1942, p. 569; memo for CG Field Forces from Deputy C/S U.S. Army, 19 Feb. 1942.

45. History, Sixth Air Force, Mar. 1942-May 1943, pp. 118 ff.; History, Caribbean Air Force, p. 463.

46. U.S. Fleet Antisubmarine Bulletin, June 1943.

47. Report, Col. R.H. Wooten to CG Field Forces, 12 Feb. 1943, in History, Sixth Air Force, March 1942-May 1943; Statistical Control, Caribbean data file, Dec. 1941-Dec. 1943.

48. Memo, Office of A-2, Hq. Antilles Air Command, 30 Nov. 1944; U.S. Fleet Antisubmarine Bulletin, June 1943.

49. Standish report; History, 1st Sea Search Attack Gp.

50. Standish report.

51. Memo for Arnold from AC/AS, AWP, 15 Jan. 1942.

52. Memo for Arnold from Rear Adm. J.H. Towers, 14 Feb. 1942.

53. *Ibid.*

54. Memo for Arnold from AC/AS, AWP, 15 Jan. 1942.

55. *Ibid.*

56. Ltr., Arnold to King, 25 Feb. 1942.

57. Memo for Arnold from Towers, 14 Feb. 1942. The AAF had sought information concerning the proposed employment of the planes requested (see R&R, Arnold to Harmon, 3 Feb. 1942). In his memorandum of 14 February Admiral Towers declared: "The uncertainty as to the precise areas in which the Fleet may be called upon to operate makes it impracticable to list with precision the operating areas and bases of the requested landplane bombers. In general, they are assigned to Fleet Patrol Wings, with the exception of two Marine medium bombardment groups for defense of outlying bases for which the Navy has accepted responsibility. It may be expected that they will be employed in northern waters, where seaplane operation is difficult or impossible by reason of ice conditions, and from shore bases elsewhere, in the discharge of Naval air functions, where their performance renders them superior to seaplane patrol planes."

58. See for example, memo for C/S from Arnold, 25 Feb. 1942; R&R, Arnold to Maj. Gen. M.F. Harmon, 2 Feb. 1942.

59. Ltr., Arnold to King, 9 Mar. 1942.

60. See AAFAC files 115.51 and 115.52; report, The Coastal Command System of Operational Control, 17 Feb. 1942; conference with Comdr. R.B. Martineau, 17 July 1942; digest of agreement, Admiralty and Air Ministry, covering exercise of operational control, 24 Apr. 1941, supplied through courtesy of Dr. E.L. Bowles; *Coastal Command, The Air Ministry Account of the Part Played by Coastal Command in the Battle of the Seas, 1939-1942* (New York, 1943).

61. Lt. Gen. Joseph T. McNarney's notes on trip to First Air Force and I Bomber Command, 23 Apr. 1942; memo for Arnold [from AFRDB], 20 May 1942; memo for TAG by OPD, 27 May 1942; ltr., Hq. Third AF to CG AAF, 15 June 1942.

62. Memo for Col. Glantzberry from Col. F.R. Pitts, 20 Aug. 1942; McNarney's notes, as cited in n. 61.

63. See sources as cited in n. 62; also ltr., Marshall to King, 17 Sept. 1942, Tab XIV A, in Bowles report to S/W, The

Acute Problem of Ocean-borne Transport and Supply.

64. Draft of plans, n.d., n.s., and notes for conference on improvement in anti-submarine operations, 1 June 1942, in AAFAC files 113.3 and 001. Cf. memo for AC/S, OPD from AC/AS, Plans, 4 June 1942, in Plans file III-R-2, Bk. 1, which is virtually the same plan.

65. Memo for Marshall from King, 21 June 1942, Tab XII B, in Bowles report.

66. See sources cited in n. 64.

67. Ltr., AM P.B. Joubert to Lord Halifax, 16 Aug. 1942, Tab II B, in Three Essays. This letter was sent in answer to Lord Halifax's request for information concerning British experience which might be of help to the United States in its antisubmarine campaign.

68. Memo for CG EDC from AC/S, OPD, 20 May 1942; memo for CG AAF from AC/S, OPD, 20 May 1942.

69. See sources cited in n. 64.

70. Memo for King from McNarney, 26 May 1942.

71. Ltr., King to Marshall, 10 June 1942; ltr., King to Comdrs. ESF and GSF, 10 June 1942.

72. Memo for King from Marshall, 19 June 1942, Tab XII A, in Bowles report.

73. Memo for Marshall from King, 21 June 1942. Cf. ltr., King to Marshall, 10 June 1942.

74. Memo for Marshall from King, 21 June 1942.

75. Memo for Knox from Stimson, 7 July 1942.

76. Memo for Stimson from Knox, 10 July 1942.

77. Memo for Knox from Stimson, 23 July 1942.

78. Memo for CG AAF from Brig. Gen. T.T. Handy, 27 June 1942; memo for S/W from Dr. Bowles, 7 Aug. 1942.

79. History, 1st Sea Search Attack Gp., especially Apps. 3 and 4. Cf. draft chapter, SADU, in AAFAC file.

80. History, 1st Sea Search Attack Gp.

81. *Ibid.* Care should be taken in accepting operational information reported in history of the 1st SSA Group

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because it tallies neither with I Bomber Command assessments nor with those made by COMINCH.

82. Memo for S/W from Bowles, 7 Aug. 1942.

83. Ltr., Marshall to King, 14 Sept. 1942, TAB XIV A, in Bowles report; memo for CG AAF from McNarney, 22 Sept. 1942, Tab XIV C, in Bowles report.

84. GO 84, First AF, 15 Oct. 1942; memo by Maj. F. E. Bauer, 20 Nov. 1942; ltr., Col. F. C. Milner to CG AAFAC, 28 Dec. 1942; memo by Milner, 28 Dec. 1942; ltr., Maj. Gen. G.E. Stratemeyer to Air Marshal L.S. Breadner, RCAF, 9 June 1943; all correspondence in AAFAC files 211, 211.1, 212.

85. JCS 38th Mtg., 20 Oct. 1942; notes on JCS 38th Mtg., attached to JCS 93/1.

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1. ABC-1, 27 Mar. 1941, par. 13.

2. JCCSs-1, 24 Dec. 1941.

3. ABC-4/6, 10 Jan. 1942; JCCSs-11, 13 Jan. 1942.

4. ABC-1: 32 squadrons of bombers and fighters, more in 1942. RAINBOW No. 5, Concentration Plan (approved 19 August 1941): 3 groups HB, 1 group MB for England; 2 groups of pursuits for Northern Ireland, 1 for Scotland. RAINBOW No. 5, Basic Plan, Revision No. 1, 19 November 1941: 3 groups HB, 2 groups MB, 3 groups of pursuits for the British Isles.

5. Memo for AC/S, WPD, Revision of Joint Army and Navy Basic War Plan, 31 Oct. 1941.

6. JCCSs-1.

7. R&R, Arnold to Spaatz, Conversation with Portal, 1 Jan. 1942; ltr., Arnold to Portal, 2 Jan. 1942.

8. Memo for AC/S, WPD from AC/AS, A-3, Air Corps Garrison Designated as BR, 5 Jan. 1942.

9. Memo for AAG from AC/AS, A-3, Priority and Organization of Task Forces, 15 Jan. 1942.

10. CCS 2d Mtg., 27 Jan. 1942.

11. CCS 40, 16 Feb. 1942; draft memo

for C/AAF, Plan to Move 2 HB Groups, n.d.

12. VIII Bomber Command Diary, 4 Feb. 1942.

13. In the memo cited in note 8 above, the 29th and 44th Bombardment groups (H) were designated for BR.

14. Ltr., Portal to Arnold, 14 Jan. 1942.

15. Ltr., Arnold to Portal, 14 Jan. 1942.

16. CCS 47, 22 Feb. 1942.

17. CCS 56, 5 Mar. 1942.

18. Memo for Col. Craig from E.E.P. [attridge], Conference, 6 Mar. 1942; CCS 56/1, 6 Mar. 1942.

19. Memo for C/AAF from D.D. Eisenhower, AC/S, Establishment of USAAF in the UK, 4 Mar. 1942.

20. Memo for the C/S, Air Support of a Continental Invasion from the British Isles (to accompany WPD App., Sec. V of Plan for Operations in N.W. Europe, Mar. 27, 1942), 30 Mar. 1942.

21. CPS 26/1, 3 Apr. 1942.

22. C.O.S. (42) 23d Mtg. (O), War Cabinet Chiefs of Staff Committee, part of C.O.S. (42) 112th Mtg., 9 Apr. 1942.

23. *Ibid.*

24. C.O.S. (42) 97 (O), 13 Apr. 1942; C.O.S. (42) 118th Mtg., 14 Apr. 1942. The substance of these papers is contained in CM-2400, Amembassy to MILID, 14 Apr. 1942.

25. CM-70, "Former Naval Person" to President, 17 Apr. 1942.

26. CPS 26/2/D, 28 Apr. 1942.

27. C.O.S. (42) 23d Mtg., 9 Apr. 1942; ltr., Eaker to CG USAFIB, 26 Apr. 1942.

28. File 706, 15 May 1942.

29. Memo for Adm. Stark from Arnold, 23 Apr. 1942.

30. Memo for Arnold from AC/AS, Plans, British Offer to Equip with Spitfires our Pursuit Units going to Great Britain, 22 Apr. 1942; CCS 69, 4 May 1942. The Air Staff did not favor this proposal.

31. Memo for Marshall from FDR, 6

May 1942 (in reply to notes from Marshall and Adm. King).

32. Memo for Eisenhower from Arnold, 12 May 1942; Memo for the Record, 18 May 1942, in WP-I-General #2.

33. CCS 61/D, 9 Apr. 1942; draft msg., FDR to PM, n.d.; JCS 14th Mtg., 11 May 1942.

34. History, Eighth Air Force, I, 52.

35. Arnold-Portal Conversations, 1st Mtg., 26 May 1942, quoted in History, Eighth Air Force, I, 53.

36. *Ibid.*

37. VIII Bomber Command Diary, 26 May 1942.

38. History, Eighth Air Force, I, 53-54.

39. Ltr., Portal to Arnold, 31 May 1942; memo for Arnold from Portal, 31 May 1942.

40. Memorandum of Agreement between Lt. Gen. Arnold, Rear Adm. Towers and Air Chief Marshal Portal, 21 June 1942.

41. CCS 30th Mtg., 2 July 1942.

42. History, Eighth Air Force, I, 71.

43. *Events Leading up to World War II*, H. Doc. 541 (78th Cong., 2d sess.), p. 334.

44. CCS 27th Mtg., 19 June 1942.

45. *Ibid.*

46. CCS MFI #14, 19 June 1942.

47. CCS 83, 21 June 1942.

48. Ltr., Brig. Gen. Asa N. Duncan to Spaatz, 23 June 1942, quoted in History, Eighth Air Force, I, 73.

49. CCS 83/1, 24 June 1942.

50. CCS 29th Mtg.; JCS 22d Mtg., 30 June 1942.

51. So Air Chief Marshal Sir Christopher Courtney informed Spaatz. (Conference Notes, 23 June 1942. Cf. CM, Air Ministry for RAFDEL [Portal for Arnold], 26 June; H.C. Butcher, *My Three Years with Eisenhower* [New York, 1946], p. 11.)

52. Msg. of 8 July discussed in JCS 24th Mtg., 10 July 1942.

53. JCS 24th Mtg.

54. *Ibid.*

55. Butcher, *op. cit.*, pp. 24-29.

56. CCS 94, 24 July 1942.

57. CCS 32d Mtg., 24 July 1942.

58. Butcher, *op. cit.*, p. 32; CCS 94.

59. CCS 34th Mtg., 30 July 1942.

60. Butcher, *op. cit.*, p. 45.

61. CCS 94.

62. C.O.S. (42) 23d Mtg. (O), 9 Apr. 1942; Butcher, *op. cit.*, p. 29; CCS 94.

63. CCS 32d Mtg., 24 July 1942.

64. *Ibid.*; CCS 94.

65. Butcher, *op. cit.*, p. 37 (31 July 1942).

66. CCS 91, 7 July 1942.

67. CCS 94.

68. Memo for McNarney from Arnold, Availability of B-17's for Immediate Departure to SUMAC, 20 July 1942.

69. CCS 32d Mtg.

70. Ltr., Spaatz to Arnold, quoted in History, Eighth Air Force, I, 77.

71. Ltr., Stratemyer to Spaatz, 24 Aug. 1942, *ibid.*

72. CCS 37th Mtg.

73. H.H. Arnold and Ira C. Eaker, *Winged Warfare* (New York, 1941), p. 104.

74. ABC-1, Annex III, par. 52.

75. Ltr., Brig. Gen. H.J. Maloney to Maj. Gen. J.E. Chaney, 10 Sept. 1941.

76. RAINBOW No. 5, Operations Plan, Sec. VII, par. 28b.

77. ABC-1, par. 14 and Annex I.

78. History, VIII Air Force Service Command.

79. Chaney's report was dated 15 December 1940. (History, Special Observer Group [SPOBS] Prior to the Activation of the ETO.)

80. Secret orders dated 26 Apr. 1941, *ibid.*, p. 14.

81. GO 1, Hq. SPOBS, 19 May 1941.

82. History, SPOBS, pp. 14 ff.

83. *Ibid.*, pp. 75-99.

84. *Ibid.*

85. *Ibid.*

86. A brief account of these projects

is given in History, SPOBS, chap. i. Something of the importance attached to them in the winter of 1941-42 may be sensed from the great amount of pertinent correspondence in AAF Hq. files. (For TURBINLITE see especially, memo for Arnold from C.E. Duncan, S/AS, Plan to Establish and Train a Turbinlite Squadron [N.F.] in the British Isles, 12 Jan. 1942; memo for Arnold from Kuter, DC/AS, 2 May 1942. The one squadron which was dispatched to England for this purpose was redesignated 15th Bombardment Squadron [L] and was the first AAF unit to see action in the ETO. For cancellation of SHADOW 82, see R&R, Establishment of a Shadow Organization in N. Ireland, AFAEP to AFDOP, 25 Apr. 1942. On TRIGGER, see especially, ltr., McNarney to Portal, 30 Sept. 1941; AWPD Division Digest, 9 Apr. 1942.)

87. History, SPOBS, chap. ii.

88. Ltr., Maj. Gen. A.E. Nye, Dir. of Staff Duties, War Office to Chaney, 27 Sept. 1941; Chaney to Nye, n.d., but in reply.

89. Ltr., Arnold to Chaney, 8 Nov. 1941.

90. Ltr., Chaney to C/S, Command Arrangements, US Army Forces in Great Britain, 20 Sept. 1941.

91. Ltr., Lt. Col. H.L. George, AWPD to Col. H.L. McClelland, SPOBS, 8 Nov. 1941.

92. Ltr., Chaney to Arnold, 5 Dec. 1941.

93. *Ibid.*, Incl. 1, Graphic Outline of the Basic Organization of US Forces in Great Britain.

94. Memo for Gen. McNarney from Chaney, 6 Dec. 1941.

95. Letter of Instruction No. 2, 11 Dec. 1941.

96. CM, AGWAR to SPOBS, 8 Jan. 1942.

97. Memo for CG AFCC, etc. from Arnold, Channels of Communications with Gen. Chaney, 2 Feb. 1942.

98. See the many requisitions for staff personnel, of which the following are examples: CM-368, SPOBS to AGWAR, 7 Jan. 1942; CM-429, London to AG-

WAR, 16 Jan. 1942; CM-465, London to AGWAR, 24 Jan. 1942; CM-92, London to AGWAR, 21 Feb. 1942; CM-634, London to AGWAR, 24 Feb. 1942; CM-726, London to AGWAR, 9 Mar. 1942.

99. History, VIII AFSC, chap. i.

100. Ltr., Eaker to H.L. George, 5 Mar. 1942.

101. The chart, Schematic Organization U.S. Army Air Forces in the United Kingdom, was indorsed: "Concur for tentative approval. Chart to be referred to General Chaney for remark. Lt. Gen. L.J. McNair."

102. Memo for C/S USAAF in British Isles from Arnold as DC/S, 26 Jan. 1942.

103. Directive for A-1 by C/AS, Activation of AAF Units for British Isles, 11 Feb. 1942.

104. CM-OUT-399 (1-24-42), Arnold to SPOBS, AF 1/401, 24 Jan. 1942.

105. CM-465, London to AGWAR, 24 Jan. 1942; CM-495, London to AGWAR, 30 Jan. 1942.

106. CM-52, Chaney to GHQ, 31 Jan. 1942; memo for AG from CG GHQ, Organization of US Army Forces in the UK, 3 Feb. 1942.

107. CCS 40, 16 Feb. 1942.

108. Ltr., Arnold to Eaker, Initial Directive to Bomber Commander in England, 31 Jan. 1942.

109. CM-OUT-472 (2-6-42), CG AAF to SPOBS, AF 2/105, 5 Feb. 1942.

110. Details Which Must Be Accomplished by Bomber Command Advance Echelon, n.d.

111. Memo for JSP, 24 Feb. 1942.

112. CM-OUT-519 (2-12-42), Arnold to SPOBS, AF 2/207, 12 Feb. 1942.

113. CM-634, CM-635, CM-636, all London to AGWAR, 24 Feb. 1942.

114. Ltrs., Eaker to George, 5 Mar. 1942; Eaker to Spaatz, 1 Mar. 1942.

115. Ltr., Eaker to Spaatz, 1 Mar. 1942.

116. *Ibid.*

117. Ltr., Eaker to George, 5 Mar. 1942.

118. Ltr., Eaker to Asa N. Duncan, 10 May 1942.
119. CM-667, London to AGWAR, 27 Feb. 1942.
120. Memo for C/S USAAF in British Isles from Arnold, 26 Feb. 1942.
121. Memo for C/AAF from Eisenhower, Establishment of USAAF in the UK, 4 Mar. 1942.
122. Memo for AC/S, WPD from C/AAF, Establishment of USAAF in the UK, 11 Mar. 1942. A buck slip attached to this memo, dated 6 March, carries this penciled note from "HHA": "In view of activities yesterday, I think this action to be OK for the present."
123. Ltr., Arnold to Eaker, 5 Mar. 1942.
124. Ltr., Marshall to CG USAFBI, 19 Mar. 1942.
125. CM-875, London to AGWAR, 24 Mar. 1942.
126. CM-150, Marshall to Chaney, 30 Mar. 1942.
127. CM-OUT-1181 (4-8-42), Marshall to USFOR, WD 235, 7 Apr. 1942.
128. CM-OUT-2141 (4-12-42), Arnold to Marshall, USFOR R290, 11 Apr. 1942.
129. CM-1261, Chaney to AGWAR, 24 Apr. 1942.
130. CM-1342, Chaney to AGWAR, 1 May 1942; CM-IN-0487 (5-2-42), Chaney to AGWAR, 1363, 2 May 1942.
131. CM-IN-2699 (5-10-42), London to AGWAR, 1474, 10 May 1942.
132. GO 1, Hq. Eighth AF (Bolling Field), 5 May 1942.
133. Progress Report of VIII Air Support Command, 12 May 1943.
134. Memo for CG AAF from Spaatz, Organization of US Forces in the British Isles with Particular Reference to the Relationship of the Eighth Air Force to the RAF, n.d.
135. Memo for Eisenhower from Harmon, Organization of the US Forces in the British Isles, 25 May 1942.
136. Memo for AC/S, OPD from Col. J.E. Hull, European Sec., Theater Gp., OPD, Organization of US Forces in British Isles, 4 June 1942.
137. CCS 75, 5 June 1942.
138. JCS, 19th Mtg., 9 June 1942.
139. CCS 24th Mtg., 10 June; JCS 20th Mtg., 15 June; CCS 25th Mtg., 16 June; JCS 21st Mtg., 23 June; CCS 30th Mtg., 2 July; JCS 29th Mtg., 18 Aug. 1942.
140. CM-OUT-1697 (6-8-42), Marshall to USFOR, WD 1120, 8 June 1942.
141. Memo for Eisenhower from Arnold; ltrs., Arnold to Chaney, to Lee, and to Hartle, all dated 10 June 1942.
142. CM-IN-6792 (6-21-42), London to AGWAR, 2238, 21 June 1942.
143. R&R, Directive for General Spaatz as CG of Eighth Air Force, AFDAS to AFAEP, 15 June 1942; memo for Spaatz from Arnold, 20 June 1942.
144. Memo for Eisenhower from Marshall, Letter of Instruction, 20 June 1942.
145. Ltr., Eisenhower to CG Eighth AF, 21 July 1942.
146. Ltr., Spaatz to CG ETOUSA, 12 Aug. 1942.
147. Ltr., Arnold to Spaatz, 30 July 1942.
148. Ltr., Spaatz to CG ETOUSA, 14 Aug. 1942; GO 29, Hq. ETOUSA, 21 Aug. 1942.
149. CM-OUT-576 (2-21-42), Arnold to Chaney, AF 2/353, 21 Feb. 1942.
150. Ltr., Harris to Eaker, 31 July 1942.
151. ABC-1, par. 12.
152. Liddell Hart, *The Defence of Britain* (New York, 1939).
153. Speech on the War Situation delivered to the House of Commons on 20 August 1940, in R.S. Churchill, ed., *Into Battle* (London, 1941), p. 253.
154. General Strategy Review by the British Chiefs of Staff, 31 July 1941, par. 29.
155. Quoted in Report [informal] by Lt. Col. G. DeF. Lerner, 28 Apr. 1942.
156. General Strategy, as cited in n. 154, par. 36-37.
157. Serial 236, Employment by the U.S. Navy of Aircraft Engaged in Operations over the Sea, [British] Naval

- Attaché for Air to SPENAVO, 30 Sept. 1941.
158. CM-1965 (2-15-42), MA, London to Washington.
159. Ltrs., Eaker to Arnold, 14 Apr. 1941; Arnold to Eaker, 9 Aug. 1941.
160. Quoted in Charles Ead, comp., *Winston Churchill's Secret Session Speeches* (New York, 1946), p. 85.
161. Lerner report, as in n. 155.
162. Note by Air Marshal Sir Arthur Harris on the Role and Work of Bomber Command, WP (42) 374, 24 Aug. 1942.
163. Ltr., Harris to Arnold, 14 Aug. 1942.
164. *Ibid.*
165. J.B. No. 325 (Serial 729), JB to SPENAVO and SPOBS, Comments on General Strategy Review by British Chiefs of Staff, 25 Sept. 1941, par. 9.
166. CM-WW707, AIRWHIT to RAFDEL, personal, C/AS to Harris, 12 Feb. 1942; memo for CNO from Comdr. Forest Sherman, British Air Programme, 18 Aug. 1941; CM-216, London to TAG, 6 Dec. 1941; CM-CRO61, SPENAVO to C/AC, 29 Nov. 1941.
167. Memo for S/W from R.A. Lovett, AS/W, G-2 Report of Adm. Ghormley's Estimate of Bombers as Offensive Weapons, 17 Nov. 1941 (re Ghormley's memo of 14 Nov.).
168. *Ibid.*; memo for C/AS from AWPD, Comments on Attached Memo re Lessons from British Air Offensive, 18 Nov. 1941.
169. Ltr., Eaker to Chaney, 26 Apr. 1942.
170. File 706, 26 June 1942.
171. See message to the effect that bombing was being seriously diverted to the Battle of the Atlantic by order of Churchill and against the judgment of the RAF. (CM, Lee to WD, 18 Apr. 1941.) Cf. WP (42) 374 as cited in note 162 above, in which Harris states that between April 1941 and March 1942 50% of Bomber Command's operations were against maritime targets.
172. General Strategy, par. 30. Cf. British rejoinder to JB comments on same in AL (41) 8th Mtg., War Cabinet, American Liaison, 21 Nov. 1941, Annex A.
173. General Strategy, par. 30.
174. *Bombers' Battle*, by a Wing Commander (London, 1943), pp. 197-200.
175. AL (41) 8th Mtg., 21 Nov. 1941, Annex A.
176. *Bombers' Battle*, pp. 201-9.
177. H.A. Toulmin, Jr., *Air Service, A.E.F., 1918*, chap. xv.
178. William Mitchell, *Winged Defense*, p. 16; Air Service Tactical School, Bombardment (Washington, 1926), p. 62.
179. ASTS, Bombardment, p. 6; ltr., Follett Bradley to Col. W.J. Paul, 10 Apr. 1947.
180. ASTS, Bombardment, p. 62.
181. Ltr., Brig. Gen. H.S. Hansell to author, 24 Feb. 1947.
182. Isaac Don Levine, *Mitchell, Pioneer of Air Power*, p. 151; ASTS, Bombardment, p. 54.
183. Memo for Col. W.J. Paul from Dr. Chauncey E. Sanders, Relationship of the Development of AAF Bombing Doctrine to the Development of the Modern Bombsight, 10 Mar. 1947.
184. *Ibid.*
185. *Ibid.*
186. *Ibid.*
187. AWPD/1, Tab 1, par. 5.
188. *Ibid.*
189. *Ibid.*, par. 6.
190. *Ibid.*, Tab 3.
191. E.g., *Aeroplane*, 16 May; 1 Aug.; 22 Aug. 1941.
192. Ltr., Harris to Arnold, 2 July 1941.
193. *Ibid.* Cf. CM, London, Harmon to Arnold, 1 May 1942.
194. Spaatz Staff Meeting, 10 Sept. 1941, Talk by Brandt on Use of B-17 by RAF.
195. CM, Lee to WD, 9 July 1942; CM-57, Chaney to TAG, 22 July 1942.
196. Brandt, as in n. 194. *Bombers' Battle*, p. 139, puts this as the first B-17 mission.
197. OCAC, Summary of B-17's

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(Fortress I) Bombing Operations, 12 Sept. 1941.

198. Report of Interview with Maj. E.P. Mechling, 7 Oct. 1941.

199. Brandt, as in n. 194.

200. A Sperry employee reported that bombardiers had dropped fewer than twenty-five practice bombs. (Ltr., Arnold to Air Attaché, London, Combat Employment of B-17 Airplanes, 1 Oct. 1941.)

201. CM, London to C/AAF, 24 July 1941.

202. Summary of B-17's, as in n. 197.

203. Arnold to Air Attaché, as in n. 200; and 1st ind., Military Air Attaché to Arnold, 16 Oct. 1941.

204. CM-664, London to AGWAR, 11 Oct. 1942.

205. Memo for C/AS, Notes on a Conference with Two British Fighter Pilots and Two British Bomber Pilots, 26 Nov. 1941.

206. CM-303, Chaney to AGWAR, 24 Dec. 1941.

207. Memo for C/AS from AC/AS, A-3, Notes on a Conference with British Pilots, 2 Jan. 1942.

208. Memo for Gen. Raymond E. Lee from Chaney, Comments on Analysis of Bomb Damage to Key Points, 5 Sept. 1941.

209. CM-70, Arnold to Chaney, 6 Oct. 1941.

210. Memo for Col. George from Maj. S.E. Anderson, Research Regarding Bomber-Fighter Combats in Europe, 15 Oct. 1941.

211. Memo for C/AAF from AWPDP, Equipment Necessary for Daylight Penetration, 23 Oct. 1941.

212. Arnold had suggested the development of a multi-seat fighter in 1934. (Ltr., Lt. Col. H.H. Arnold to C/AC, 26 Nov. 1934.) For an explanation of British failure to develop a long-range fighter, see interview with Air Marshal Sir Roderick Hill, 14 Sept. 1944.

213. Giulio Douhet, *Command of the Air*, pp. 337 ff.

214. AWPDP/1, Tab 3.

215. Col. Ira C. Eaker to C/AAF, Report on Trip to England, 30 Aug.-1 Oct. 1941.

216. Requirements for Destroyer Escort Plane, 8 Aug. 1942.

217. Report, Bombing Accuracy Board (F.L. Anderson, H.G. Montgomery, Edward Flanick), 2 Jan. 1942.

218. *Ibid.*

219. Memo for C/AS from George, 20 Jan. 1942.

220. Memo for C/AS from Arnold, Creation of Bombardment Tactical Committee, 26 Feb. 1941.

221. Ltr., Arnold to Eaker, Initial Directive to Bomber Commander in England, 31 Jan. 1942.

222. Eaker, Plan for Bomber Command and Constituent Units to Arrive in UK 1942, 20 Mar. 1942.

223. AWPDP Division Digest, 21 Apr. 1941.

224. Directive for Eighth Air Force from Gen. Eisenhower, 21 July 1942.

225. VIII Bomber Command Diary, 1 Aug. 1942.

226. CM-OUT-519 (2-12-42), Arnold to Chaney, AF 2/207, 12 Feb. 1942; History, Eighth Air Force, I, 7.

227. Like most such documents, this directive exists in several successive forms. Those consulted here are in File 706 and in History of the VIII USAF Fighter Command, chap. iii, pp. 49-51.

228. Ltr., Eaker to Harris, 30 July 1942.

229. Ltr., Harris to Eaker, 31 July 1942. According to a competent British source, "the U.S. and British views on the possibilities of bombing Germany by day had been reconciled" by the end of March 1942. (See Anglo-American Air Collaboration: Information requested by Professor Hopper from Air Ministry Historical Branch.) This document, which came to this author's hand too late to consult for earlier chapters, has much material concerning early strategic and air plans.

230. *New York Times*, 11 and 16 Aug. 1942.

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231. Ltr., Spaatz to Stratemeyer, 14 Sept. 1942.

232. Ltr., Brig. Gen. H.S. Hansell to the author, 24 Feb. 1947.

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1. AAF Reference History No. 2, Origins of the Eighth Air Force, p. 191.

2. R&R, A-1 to AWPDP, 6 Jan. 1942.

3. Ltrs., Arnold to CG AFCC, 8 and 10 Jan. 1942.

4. Ltr., TAG to CG AFCC, 19 Jan. 1942.

5. Memo for AC/S G-3, WDGS from C/AAF, 20 Jan. 1942.

6. Ltr., Hq. AFCC to CG's First and Third AF's, 23 Jan. 1942.

7. GO 7, Hq. Third AF, 1 Feb. 1942 (corrected copy); TWX, Hq. Third AF to CO Savannah Air Base, 29 Jan. 1942.

8. List of Eighth AF Units and Dates of Arrival in Concentration Area.

9. Ltr., CG AFCC to CG Eighth AF, 31 Jan. 1942.

10. Ltr., Col. Asa N. Duncan, CO Eighth AF to C/AAF, 12 Feb. 1942.

11. Memo for C/AS from Col. Harold L. George, AWPDP, 25 Feb. 1942.

12. CCS 5/2, 3 Mar. 1942.

13. Ltr., Hq. Eighth AF to CO VIII FC, 19 Feb. 1942.

14. Ltr., CG Eighth AF to CG Third AF, 27 Mar. 1942.

15. Ltr., Dir. of War Organization and Movement to CG Eighth AF, 31 Mar. 1942.

16. R&R, A-3 to AWPDP, 27 Feb. 1942, and AWPDP to A-3, 28 Feb. 1942.

17. R&R, Items of Interest from Special File 706, 31 Mar. 1942; ltr., Hq. AAF to CG's First, Second, Third, Fourth, Eighth AF's, 4 Apr. 1942.

18. See source in n. 14.

19. Ltr., Hq. AAF to CG Third AF, 18 Apr. 1942.

20. Memo for Gen. Kuter from Spaatz, 15 Apr. 1942.

21. Ltr., Eisenhower, OPD to AGO, 23 Apr. 1942.

22. GO 1, Hq. Eighth AF (Bolling Field), 5 May 1942.

23. See diaries and journals of CG, C/S, and staff sections of Eighth AF for the period.

24. GO 15, Hq. Eighth AF (Bolling Field), 28 Apr. 1942.

25. GO 28, Hq. AAB, Bolling Field, 4 July 1942.

26. Ltrs., AGO to CG Eighth AF, 15 and 27 May 1942; GO 32, Hq. Eighth AF, 18 Sept. 1942.

27. A-1 Diary, Hq. Eighth AF (Bolling Field), *passim*; memo for Col. Harold A. McGinnis, CO VIII AFSC from Col. A.J. Lyon, 2 May 1942; ltr., Col. McGinnis to Eaker, 5 June 1942. See also diaries of CG, C/S, and staff sections of Eighth AF for period.

28. Training Memo 3, Hq. ETOUSA, 15 Sept. 1942; Memo 50-3, Hq. VIII AFSC, 19 Sept. 1942; memo for all staff sections and departments from Hq. Eighth AF, 26 Sept. 1942; R&R, Stratemeyer, C/AS to AC/AS, A-1, 14 Oct. 1942; ltr., Stratemeyer to Eisenhower, 24 Oct. 1942.

29. Interview with Col. N.P. Beville, Directorate of Personnel, Hq. USSTAF by Capt. S.H. Stackpole, 11 Feb. 1944; History, Engineer Sec., Eighth AF and VIII AFSC, 23 Apr.-31 Dec. 1942, p. 2; see also diaries of CG, C/S, and staff sections of Eighth AF for May and June 1942.

30. Memo for CG Eighth AF from Col. N. Longfellow, CO VIII BC, 15 Apr. 1942; memo, Presentation by Gen. Spaatz or Lt. Col. Leon W. Johnson, 9 May 1942.

31. Eighth AF Extract Diary (Bolling Field), 21 Apr. 1942; memo for Gen. Spaatz from Lt. Col. J.K. Gerhart, 25 Apr. 1942.

32. VIII BC Diary, 11-12 May 1942.

33. Ltr., Eaker to Spaatz, 18 May 1942.

34. Ltr., Arnold to Eaker, 31 Jan. 1942.

35. Diary of Brig. Gen. Eaker, 20 Feb. 1942.

36. GO 5, Hq. USAFBI, 22 Feb. 1942.

37. Ltr., CG USAFBI to Eaker, 25 Feb. 1942.

38. Eaker Diary, 15 Apr. 1942.

39. Plan for a Bomber Command to be in the United Kingdom, 20 Mar. 1942 (hereinafter cited as Bomber Command Plan), G-3 Annex.

40. Ltr., Eaker to Spaatz, 18 May 1942.

41. Office Memo 1, Det. Hq. Eighth AF, USAFBI, 19 May 1942.

42. Bomber Command Plan, G-3 Annex.

43. Ltr., Eaker to Spaatz, 18 May 1942.

44. Ltr., Eaker to CG Eighth AF, 6 July 1942.

45. Ltr., Eaker to AM Sir Arthur T. Harris, AOC-in-C RAF BC, 30 July 1942; ltr., Harris to Eaker, 31 July 1942; ltr., Eaker to Harris, 8 Aug. 1942; ltr., Harris to Eaker, 9 Aug. 1942.

46. Ltr., Eaker to Duncan, 10 May 1942.

47. Conferences with ACM Sholto Douglas, AOC-in-C RAF FC, 23 June and 7 July 1942, in File 706; Conference with Gen. Eisenhower, 26 June 1942, File 706.

48. Minutes of a Meeting held at the Air Ministry on 30 November 1942 to Discuss Revised Airfield Requirements of the Eighth (US) Army Air Force.

49. Arnold-Portal Conference, United Nations' Air Forces, Minutes of 3d Meeting, 28 May 1942, p. 6.

50. Ltr., Col. H.L. George, AWPD to G/C Strafford, RAFDEL, Washington, D.C., 29 Jan. 1942; ltr., Eaker to AVM Graham, RAF BC, 22 June 1942.

51. Ltr., CG Eighth AF to CG VIII Ground Air Support Command, 27 July 1942; ltr., Spaatz to CG ETOUSA, 8 Aug. 1942.

52. Draft ltr., by Lt. Col. John O'D. Murtaugh, Hq. Eighth AF, 31 July 1942; memo for AC/S, G-3, Eighth AF from Col. Murtaugh, G-3 Defense Officer, 9 Aug. 1942.

53. Ltr., Gen. Longfellow, CG VIII BC to CG Eighth AF, 10 Feb. 1943; ltr., W/C Wood, Air Ministry to CG Eighth

AF, 16 Feb. 1943; ltr., CG Eighth AF to CG ETOUSA, 24 Feb. 1943.

54. CG Eighth AF to CG ETOUSA, Report of Lt. Gen. Eaker on USAAF Activities in the U.K. Covering Period from Feb. 20, 1942 to Dec. 31, 1943, dtd. 31 Dec. 1943 (hereinafter cited as Eaker Report), p. 6; Bomber Command Plan, p. 4.

55. Bomber Command Plan, p. 4.

56. VIII BC Diary, 14 Mar., 17 May 1942.

57. *Ibid.*, 18 May 1942.

58. *Ibid.*, 19 July 1942.

59. Bomber Command Plan, G-2 Annex.

60. See Tables of Organization for various AAF echelons of organization, 1 July 1942.

61. Eaker Report, p. 6, and Intel. Annex, p. 1; ltr., Eaker to CG Eighth AF, 16 Aug. 1942.

62. Ltr., Eaker to Spaatz, 18 Mar. 1942.

63. History, 18th Weather Sq., pp. 24-26, 29.

64. Memo for Arnold from Col. A.W. Marriner, Dir. of Communications, 1 Apr. 1942.

65. Ltr., Spaatz to Eaker, 22 May 1942; ltr., Signal Officer, VIII BC to CG VIII BC, 24 July 1942; W/C P.S. Foss, Asst. Dir. Overseas (Ferrying), Air Ministry, Memorandum on the Movement by Air of U.S. Forces to the United Kingdom, App. A, 19 Aug. 1942.

66. Ltr., Col. Leland H. Stanford, Signal Officer, Hq. VIII BC to A-2 Sec., VIII BC, Report of Lessons Learned-Communications, 22 Nov. 1942, pp. 11-12; Capt. E.K. Richardson, Radio and Radar Officer, Hq. Eighth AF, Historical Review-Radio and Radar Branch, 24 Dec. 1943.

67. See sources in n. 66; also 1st ind. to ltr., Signal Sec., Hq. VIII AFSC to Signal Officer, Eighth AF, 24 Sept. 1942.

68. Stanford report, as cited in n. 66, p. 11.

69. Ltr., Brig. Gen. J.T. McNarney, C/S SPOBS to Sir Charles Portal, Brit. C/AS, 30 Sept. 1941. See also, for the

training of technical personnel, memo for Gen. Chaney, CG SPOBS from Maj. Gordon P. Saville, 1 Dec. 1941.

70. VIII BC Diary, 15 May 1942; ltr., Eaker to CG Eighth AF, 19 June 1942.

71. History, Eighth Air Force, I, 285-88.

72. Ltr., Eaker to CG USAFBI, 9 May 1942; ltr., Eaker to Duncan, 10 May 1942.

73. Ltr., Eaker to Duncan, 10 May 1942.

74. History, Eighth Air Force, I, 280-83.

75. Ltr., Eaker to CG Eighth AF, 19 June 1942.

76. Accommodations of U.S. Army Air Forces in the United Kingdom. Notes of Meeting in the Air Ministry on 28.5.42.

77. Ltr., Eaker to CG USAFBI, 17 May 1942.

78. History, Eighth Air Force, I, 288-92.

79. Ltr., Eaker to CG USAFBI, 17 June 1942.

80. Ltr., Spaatz to Eaker, 22 May 1942.

81. AAFRH-2, p. 77; GO 28, Hq. AAB, Bolling Field, 4 July 1942.

82. History, VIII Air Force Composite Command, 4 July 1942-15 Feb. 1944, pp. 13-16.

83. Among the special missions during 1941-42 were those of General Brett, Brig. Gen. Ralph Royce, Col. S.C. Godfrey, Maj. G.P. Saville, Col. J.H. Hicks, and Col. Eugene H. Beebe.

84. Interview with A/Cdre. Sharp, DC/S, Eighth AF by B.C. Hopper, 12 Oct. 1943; VIII BC Diary, 1 July, 14 Aug. 1942.

85. Bomber Command Plan, pp. 11-12.

86. AWPDP/1, Tab 5 (a), Sec. II, Pt. III, App. II, p. 1.

87. Ltr., Harris, RAFDEL to Arnold, 11 Dec. 1941.

88. See, for instance, memo for C/S SPOBS from Col. Donald Davison, Engineer, SPOBS, 5 Nov. 1941; Lt. Col. Edgar E. Glenn, Report on Visit to Northern

Ireland, 27 Nov. 1941; memo for CG AFCC and CG AAF from Col. S.C. Godfrey, Engineer Officer, AFCC, n.d. but probably Dec. 1941.

89. Ltr., Chaney to WD, 17 Dec. 1941.

90. Ltr., Eaker to Spaatz, 1 Mar. 1942; ltr., Eaker to Arnold, 5 Mar. 1942.

91. Sources in n. 90; also Eaker Diary, 4, 11 Mar., 6 May 1942.

92. Accommodations of U.S. AAF, as cited in n. 76.

93. R.A.F. Stations To Be Handed Over To Americans, A/M (Tentative List).

94. Air Ministry, Joint Organization and Maintenance (United States) (S.D. 348), June 1942 (JOMUS), Sec. XLIII.

95. History, Engineer Sec., as cited in n. 29, p. 1.

96. History, USSTAF, III, chap. i, 23-25, 54-61.

97. Bomber Command Plan, p. 3; VIII BC Diary, 14 July 1942; Eaker Report, p. 2.

98. Ltr., L.G.S. Reynolds, Air Ministry to Sec., U.S. Embassy, London, 27 June 1941.

99. Ltr., C/AAF to Brett, 19 Aug. 1941.

100. *Ibid.*

101. Msg. #49, AGWAR to SPOBS, 11 Sept. 1941.

102. Memo for Brett from SPOBS, 1 Oct. 1941; ltr., McNarney to Brett, 6 Oct. 1941.

103. Msg. #857, SPOBS to AGWAR (Brett to Arnold), 24 Oct. 1941.

104. Msg. #498, Arnold to Brett, 7 Nov. 1941.

105. Memo for McNarney from Brett, 12 Nov. 1941.

106. Letter of Intent, Col. W.F. Volandt, Hq. AAF to Lockheed Corp., 3 Jan. 1942; msg. #248, AGWAR to SPOBS, 28 Dec. 1941; msg. #672, SPOBS to AGWAR, 28 Feb. 1942; Contract #DA W535 ac-1507, War Dept. and Lockheed Aircraft Corp.

107. Memo for McNarney from Brett,

- 28 Oct. 1941; memo for C/S SPOBS from Col. Davison, 5 Nov. 1941.
108. Memo for A-4, Hq. AAF from Lt. Col. C.E. Duncan, S/AS, 12 Jan. 1942.
109. Ltr., Eaker to Spaatz, 11 Mar. 1942.
110. Ltr., Col. Lyon to C/S Hq. USAFBI, 13 Apr. 1942; Eaker Diary, 23 Apr. 1942; memo for Robert A. Lovett, AS/W for Air from Arnold, 27 Apr. 1942; Eighth AF Extract Diary, 28 Apr. 1942; msg. #1329, USAFBI to AGWAR, 29 Apr. 1942.
111. Memo for Lovett from Arnold, 27 Apr. 1942; ltr., Brig. Gen. Muir S. Fairchild, Hq. AAF to Eaker, 2 May 1942.
112. Conference, Gen. Chaney and Col. Llewellyn, Minister of Aircraft Production, n.d., probably late April or early May 1942; ltr., Col. Llewellyn to Gen. Bolte, C/S Hq. USAFBI, 23 May 1942.
113. Standing Order #229, Burtonwood Repair Depot, 30 June 1942.
114. Ltr., A.N. Duncan to Spaatz, 16 June 1942.
115. R&R, Air Officer, Hq. ETOUSA to G-4 and G-3, Hq. ETOUSA, 20 June 1942.
116. Ltr., Spaatz to Arnold, 5 July 1942.
117. For a brief discussion of this subject, see Bomber Command Plan, G-4 Annex, p. 4.
118. *Ibid.*
119. Ltr., Hq. AAF to CG's First, Second, Third, Fourth, Eighth AF's, 7 May 1942; Accommodations of U.S. AAF, as cited in n. 76, p. 3; memo for CG AAF from Col. Eugene H. Beebe, 1 June 1942.
120. Ltr., Eaker to Spaatz, 18 May 1942.
121. Ltr., Col. J.H. Hicks to Gen. Lyon, 8 June 1942; ltr., Col. J.H. Hicks to CG Air Service Command, 26 June 1942.
122. Memo for A-4, Hq. AAF from Col. George, 19 Jan. 1942; VIII BC Diary, 27 Feb. 1942; ltr., Eaker to Arnold, 11 Mar. 1942; JOMUS, Secs. XII and XXIV; Conference, Col. McGinnis, CO, VIII AFSC and Col. McMullen, Foreign Liaison Officer, ASC, 16 May 1942; ltr., Col. Lyon to CG AAF, 19 May 1942.
123. Proposed msg., Spaatz to Chaney for Eaker, 27 Apr. 1942.
124. Ltr., TAG to CG AAF, 27 Apr. 1942.
125. Memo for Arnold from Spaatz, 2 May 1942.
126. VIII BC Diary, 11-12 May 1942.
127. VIII BC Diary, *passim*.
128. Msg., Black #31, Joint Planners, Washington to Joint Planners, London, 30 Apr. 1942; ltr., CG Eighth AF to CG AAF, 26 May 1942; File 706, 5 June 1942; memo for CG's AGF, AAF, SOS from Eisenhower, AC/S WDGS, 18 May 1942.
129. Warning Orders, Hq. AAF to Hq. Eighth AF, 30 Apr. 1942; ltr., WD to All Activities Concerned, 13 May 1942; interview with Col. N.P. Beville, as cited in n. 29; GO 2, Hq. Eighth AF Staging Area Command, Ft. Dix, N.J., 13 June 1942.
130. History, VIII AFSC, chap. ii, p. 32; VIII BC Diary, 12 June 1942; memo for Col. Craig from Gen. Kuter, 16 June 1942.
131. Station List, Eighth Air Force, 31 Aug. 1942.
132. History, North Atlantic Div., ATC, I, Pt. I, 192-94, 196-98.
133. *Ibid.*, pp. 198-99; account of meeting at Bolling Field with Gen. George, Col. Giles, and Col. A.D. Smith, in File 706, 6 June 1942; Report of the Committee Appointed to take Necessary Action for the Bolero Movement, 1 May 1942; ltr., Hq. AAF to Gen. G.C. Brant, CG Newfoundland Base Command, 4 May 1942.
134. File 706, 18 Apr. 1942; Report... for the Bolero Movement, 1 May 1942.
135. VIII FC Diary, 18 Apr. 1942; ltr., Spaatz to Hunter, 28 Apr. 1942; memo for CG Eighth AF from CG AAF, 17 May 1942.
136. Memo for CG's Third and

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Fourth AF's from A.N. Duncan, 15 May 1942.

137. Ltr., WD to CG ATC (later Troop Carrier Command), 3 June 1942.

138. File 706, May 1942, *passim*; VIII FC Diary, 21-25, 30 May 1942.

139. File 706, 1 June 1942.

140. *Ibid.*, 4 June 1942; War Diary of 97th Bomb. Gp., 2-16 June 1942; interview with Col. Raymond F. Rodell, Hq. AAF, 6 Jan. 1947; memo for TAG from Col. C.C. Chauncey, 4 June 1942.

141. File 706, 10 June 1942; ltr., TAG to CG Eighth AF, 9 June 1942.

142. Ltr., Spaatz to Eaker, 6 June 1942.

143. File 706, 9 and 25 June 1942; Station List and Strength Report, Eighth AF, 30 June 1942.

144. Ltr., Eaker to Arnold, 17 June 1942; ltr., Spaatz to Arnold, 14 Aug. 1942.

145. Daily Activities Report, G-3, Hq. Eighth AF, 16-17 Aug. 1942.

146. Msg., Spaatz to Arnold, in File 706, 15 June 1942.

147. Operations Orders #7A, Hq. VIII FC, Grenier Field, Manchester, N.H., 18 June 1942.

148. History, North Atlantic Div., I, Pt. I, 216.

149. *Ibid.*, pp. 216-26.

150. Ltr., Capt. A.A. Lurie, I & S Officer, Hq. 1403d AAF Base Unit, EDATC to CG EDATC, 19 Apr. 1945.

151. Eaker Diary, 27 July 1942.

152. History, North Atlantic Div., I, Pt. I, 213.

153. Ltr., Spaatz to Lt. Col. E.P. Curtis, Hq. AAF, 23 July 1942; ltr., Eaker to Arnold, 23 July 1942.

154. History, 14th Fighter Gp. (TE); Summary of History, 64th Troop Carrier Gp., 4 Dec. 1940-21 Nov. 1942; History, 92d Bomb. Gp. (H), pp. 2-3; History, 301st Bomb. Gp., 24 May-1 Oct. 1942, pp. 5-10.

155. History, North Atlantic Div., I, Pt. I, 227-28, 254-58.

156. *Ibid.*, pp. 283-87.

157. Ltrs., Spaatz to Arnold, 20 July

and 16 Sept. 1942; R&R, Col. R.W. Harper to Hq. AAF, Plans, 3 Oct. 1942; History, North Atlantic Div., I, Pt. I, 281-83.

158. GO 4, Hq. Eighth AF, 18 June 1942.

159. Ltr., CG Eighth AF to CG ETOUSA, 25 June 1942.

160. GO 3, Hq. VIII BC, 15 June 1942.

161. GO 5, Hq. VIII BC, 27 July 1942.

162. History, 1st Bomb. Wing, Actv. to 17 Aug. 1942, pp. 21-22; History, 2d Bomb. Div. (and 2d Bomb. Wing), Actv. to 31 Dec. 1943, pp. 1-4; GO 6, 11, and 13, Hq. VIII BC, 13 Aug., 2 and 7 Sept. 1942.

163. Station List, Eighth AF, 31 Aug. 1942.

164. Memo for CG's, Eighth AF, VIII BC, VIII AFSC, and SOS, ETOUSA from CO VIII FC, 24 July 1942; GO 2, Hq. VIII FC, 28 July 1942.

165. Station List, Eighth AF, 31 Aug. 1942.

166. Interview with Brig. Gen. Robert C. Candee by B.C. Hopper, 21 Oct. 1943; GO 4 and 7, Hq. VIII GASC, 17 and 20 Aug. 1942.

167. Station List and Strength Report, Eighth Air Force, 18 Aug. 1942.

168. GO 15 and 19, Hq. Eighth AF, 31 July and 25 Aug. 1942; Station List, Eighth AF, 31 Aug. 1942.

169. History, VIII Air Force Composite Command, 6 July 1942-15 Feb. 1944, pp. 7-8.

170. GO 5, Hq. Eighth AF, 5 July 1942; GO 2, Hq. VIII AFSC, 6 July 1942.

171. GO 4 and 14, Hq. VIII AFSC, 8 July and 4 Aug. 1942.

172. GO 30, Hq. Eighth AF, 14 Sept. 1942; Memo 160-7, 2 Nov. 1942.

173. GO 29, Hq. ETOUSA, 21 Aug. 1942.

174. Ltr., Eisenhower to CG Eighth AF, 21 July 1942.

175. GO 17, Hq. USAFBI, 24 May 1942.

176. Diary, Maj. Gen. J.C.H. Lee, 9

May 1942; Conference, Gen. Lee, Cols. Larkin, McGinnis, Ross, Booth, Lyon, 9 May 1942, in Lyon Conferences.

177. Ltr., Hq. SOS to CG AAF, 26 June 1942; ltr., Gen. Spaatz to CG SOS, 7 July 1942.

178. History, VIII AFSC, chap. i, pp. 24-26.

179. History, USSTAF, III, chap. i, 24.

180. History, Engineer Sec., p. 2.

181. Conference with Mr. Ogden of the Lockheed Aircraft Corporation, including Gen. Miller, Gen. Dunton, and Lt. Col. Short, 9 July 1942; ltr., Frank to Arnold, 25 Sept. 1942.

182. Ltr., Gen. Dunton, CO 3d Service Area, VIII AFSC to Gen. Miller, CG ASC, 18 July 1942; History, VIII AFSC, chap. v, p. 55; History, USSTAF, III, chap. i, 39-41.

183. Ltr., Spaatz to Arnold, 5 July 1942.

184. Memo for C/S VIII AFSC from Frank, 17 Aug. 1942.

185. VIII AFSC Construction Program, 16 Sept. 1942.

186. Minutes of Meeting held at WIDEWING, Bushy Park, on Tuesday, 28 July 1942; ltr., Eaker to CG Eighth AF, 16 Sept. 1942; History, VIII AFSC, chap. v, pp. 103-5.

187. Annual Report of Procurement in the United Kingdom, Lt. Col. Kenneth Collins to Chief, Supply Div., VIII AFSC, 29 June 1943.

188. Msg., ETOUSA to AGWAR, 17 Sept. 1942; History, USSTAF, III, chap. ii, 91-92.

189. Ltr., Eaker to CG Eighth AF, 19 June 1942.

190. CPS 26/2/D, 28 Apr. 1942.

191. Lee Diary, 14 May 1942.

192. Summary of Bolero Requirements, Rev. 13 May 1942, incl. to memo for Spaatz from Col. Fersen, 14 May 1942.

193. Accommodations of U.S. AAF, App. A; memo for C/AS RAF from Arnold, 30 May 1942.

194. Msg. #1898, USAFBI to AGWAR, 5 June 1942.

195. Program Planning and Control Unit, Task Force Sec., Hq. AAF, Tentative Bolero Task Force, Tentative Plan for Unit Shipments, 1 July 1942. See as a preliminary move, Plans Div., War Organization and Movement, Tentative Bolero-Complete, 3 June 1942.

196. Memo for AC/S, OPD from Col. O.A. Anderson, 10 July 1942.

197. Key Plan for the Reception, Accommodation and Maintenance of the U.S. Forces (D.Q.M.G.) (L) Paper #9, 25 July 1942.

198. Eighth Air Force Commanders' Meeting, 10 Nov. 1942.

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1. VIII Bomber Command War Diary, 28 July 1942; History, Eighth Air Force, I, 132; ltr., Eaker to Brig. Gen. F. Trubee Davidson, 24 July 1942.

2. VIII BC War Diary, 12 Apr. 1942; ltr., Eaker to Davidson, 24 July 1942.

3. Ltr., Spaatz to Eaker, 22 May 1942. Cf. ltr., Eaker to CG Eighth AF, 11 Aug. 1942.

4. Ltr., Spaatz to Eaker, 22 May 1942; Training to be Conducted in Bolero Theater Prior to Entry into Combat, n.d., in USSTAF file, Combat Crews; Training Deficiencies on New Combat Crews (H.B.), n.d. but prior to 3 Aug. 1942, in same file; ltr., Eaker to CG Eighth AF, 11 Aug. 1942; VIII BC War Diary, 24 July 1942; General Eaker's Diary, 1 and 6 Aug. 1942; History, Eighth Air Force, I, 312 ff.; History, 1st Bomb. Wing.

5. History, Eighth Air Force, I, 312 ff.; Eaker Diary, 1 Aug. 1942.

6. Ltr., AM Sholto Douglas to Spaatz, in File 706; ltr., AOC-in-C, RAF FC to CG Eighth AF, 4 July 1942; File 706, 26 June 1942; ltr., Hq. VIII FC to CG Eighth AF, 11 Aug. 1942; ltr., CG VIII FC to Spaatz, 3 Aug. 1942; History, Eighth Air Force, II, 707 ff.; History, 31st Fighter Gp.

7. File 706, 12 Aug. 1942; History,

Eighth Air Force, I, 326 ff.; Achtung Indianer, a history of VIII FC, pp. 104 ff.

8. For initial decision on this matter of policy, see Joint Directif of 20 August 1942 referred to in Chapter 16.

9. History, 1st Bomb. Wing; History, Eighth Air Force, I, 310 ff.

10. VIII BC War Diary, 27 June, 2 July 1942.

11. History, 1st Bomb. Wing; VIII BC War Diary, 4 July 1942. Cf. Air Ministry report, Activities of U.S. Aircraft Operating with the RAF, 6 July 1942.

12. Air Ministry report as in n. 11.

13. History, Eighth Air Force, I, 130 ff.

14. *Ibid.*, I, 312 ff.

15. File 706, 14 Aug. 1942; Combat Manual, used for training Eighth Air Force units in BOLERO prior to entering active combat duty; Ltr., Spaatz to Arnold, 10 Aug. 1942, quoted in History, Eighth Air Force. Armstrong succeeded Cousland as group commander on or about 30 July. (VIII BC Diary, 30 July 1942.)

16. Ltr., Spaatz to Arnold, 10 Aug. 1942; ORS, An Evaluation of Defensive Measures Taken to Protect Heavy Bombers from Loss and Damage, Eighth Air Force, Nov. 1944.

17. History, 1st Bomb. Wing.

18. VIII BC Diary, 17 Aug. 1942.

19. *Ibid.* Cf. History, 97th Bomb. Gp.

20. *Sunday Times* (London), 16 Aug. 1942.

21. CM-OUT-5137 (8-17-42), Arnold to ASFOR, London, AF 23424, 17 Aug. 1942.

22. CM-IN-6736 (8-18-42), London to AGWAR, AF 21274, 18 Aug. 1942.

23. First 1100 Bombers Dispatched by Eighth Bomber Command, I, 15.

24. History, 1st Bomb. Div., 17 Aug.-30 Nov. 1942, pp. 2-3.

25. See mission report and bomb plot, in First 1100.

26. *Ibid.*

27. Ltr., Eaker to CG Eighth AF, 19 Aug. 1942.

28. History, 1st Bomb. Div., p. 4.

29. Ltr., Eaker to CG Eighth AF, 19 Aug. 1942.

30. *Ibid.*

31. See n. 23 above.

32. Msg., AOC-in-C RAF BC to Eaker, 18 Aug. 1942.

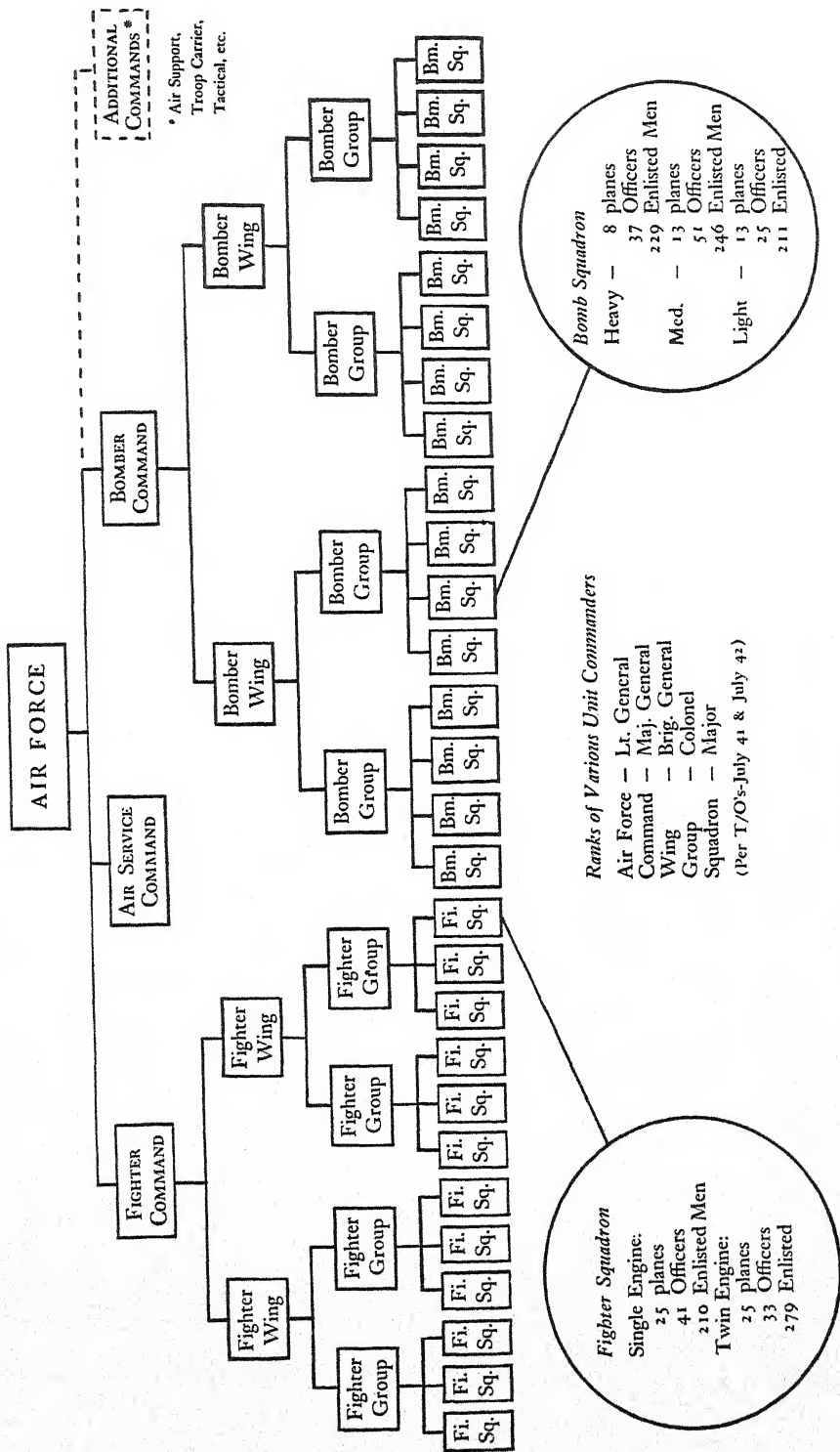
33. See AAF Reference History No. 2, Origins of the Eighth Air Force, for full discussion of policy prior to August 1942.

34. CCS 94, 24 July 1942.

35. AWPDP-1.

36. *Ibid.* Cf. AWPDP-42. For fuller discussion of problem of production priorities, see AAF Reference History No. 18, The Early Operations of the Eighth Air Force and the Origins of the Combined Bomber Offensive, chap. iv.

APPENDIXES



REPRESENTATION OF RELATIVE STRENGTH OF AAF UNITS, 1942

The strength of a group in terms of squadrons and the strength of a squadron in terms of planes and personnel is actual as of May 1942. The number of groups in a wing, wings in a command, and commands in an air force is determined by need. Wings usually contained two to four groups. Commands, likewise, were organized as the size and scale of activity demanded.

TYPE	MODEL & SERIES	NO. ENG.	NORM. CREW	RANGE	SERVICE CEILING	ARMAMENT	BOMB LOAD	1ST ACCEPT. DATE
EAVY BOMBARDMENT	B-17 E	4	6-10	2000/4000	36600	1-30; 8-.50	2 X 2000	Sept. 41
	B-24 C	4	6-10	2100/5000	34000	7-.50	4 X 2000	Dec. 41
MEDIUM BOMBARDMENT	B-18 A	2	6	1100/4000	23900	3-.30	4 X 1100	June 38
	B-25 B	2	5-6	1300/3000	23500	1-30; 4-.50	6 X 500	Aug. 41
	B-26 B	2	5-6	1150/3000	21-25000	2-30; 4-.50 or 12-.50	2 X 2000 } or torp. 1 X 1000	Apr. 42
LIGHT BOMBARDMENT	A-20 A	2	2-4	525/2400	20300	8-.30	16 X 100 & 4 X 250	Dec. 40
	A-24	1	2	950/1000	26000	2-30; 2-.50	1 X 1000 & 2 X 100	June 41
GHTERS	P-26 A	1	1	550/None	25000	1-.30; 1-.50	1 X 500	1933
	P-35	1	1	1000/300	30800	1-.30; 1-.50	10 X 30	July 37
	P-36 A	1	1	825/None	33000	1-.30; 1-.50	None	Apr. 38
	P-38 E	2	1	500/None	39000	4-.50; 1-20mm	None	Oct. 41
	P-39 D	1	1	800/500	32000	4-30; 2-.50; 37mm or 20mm	1 X 500	Feb. 41
	P-40 D Spitfire Vb	1	1	800/500 335/None	30600 37770	4-.50 4-30; 2-20mm	1 X 500 & 6 X 20 None	May 41
ECONNAISSANCE & PHOTO	F-4	2	1	1100/None	40000	None	None	Dec. 35
	O-47 A	1	3	500/None	23200	2-.30	None	
TRANSPORT	C-39	2	2-4	1500/12pl-2cr.	20600	None	12 pl. or 3330#	Jan. 39
	C-47	2	2-4	1600/6700	24000	None	27 pl. or 10000#	Jan. 42
	C-53	2	3-4	SAME AS FOR C-47		None		Oct. 41
	C-75	4	3-5	1750/33 places	23300	None	33 places	
	C-98	4	15			None	74 pl. or 10500#	

SELECTED LIST OF PLANES IN USE BY THE AAF, DECEMBER 1941-AUGUST 1942

EXPLANATORY NOTES

As the performance data for each aircraft model vary greatly with the series, it has been necessary to specify a series designation for each aircraft model listed. An attempt has been made to select that series in widest use in all theaters during the period December 1941-August 1942.

CREW:

Except for those aircraft whose design definitely limits the number of crew members that may be carried, the above figure indicate the size of the crew generally used.

The specific range listed on the left side of the column is an idealistic range in statute miles based on an arbitrary load within practical limits of the aircraft. No allowance is made for warm-up, take-off, climb to altitude, reserve, wind, etc. Optimum altitudes and cruising speeds are used and bombs are assumed dropped at halfway point. The load carried at this range is listed at the right side of the column.

SERVICE CEILING:

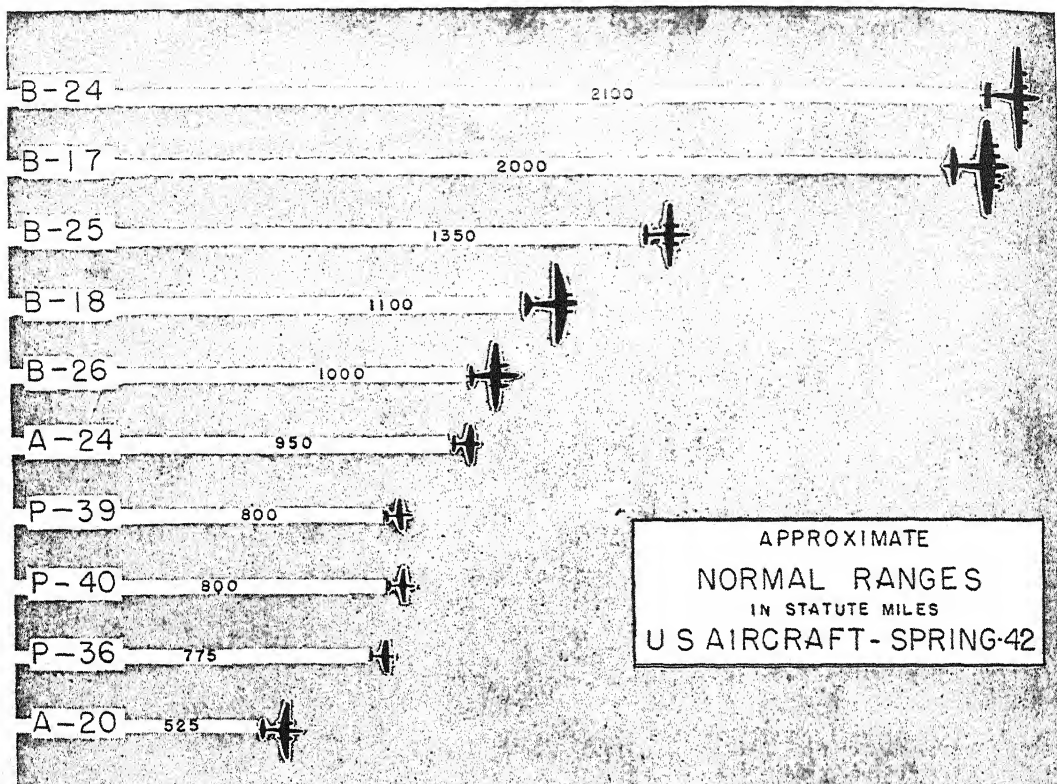
That altitude at which the rate of climb decreases to 100' per minute. These figures are based on *design gross weight*.

ARMAMENT:

Typical gun installation showing number of guns and caliber. Where two installations are given, both were in general use within the series.

BOMB LOAD:

Maximum practical load (all bombs of one size). When combination is listed, figures indicate the number and size of both internal and external bombs that can be carried simultaneously. For cargo types, figures given apply to pay load: the number of troops or passengers plus crew or, in lieu thereof, pounds of cargo.



NOTE: The range indicated above is idealistic and based on an arbitrary load within the practical limits of the aircraft. No allowance is made for warm-up, take-off, climb to altitude, reserve, etc. Optimum altitudes and cruising speeds are used and bombs are assumed dropped at halfway point. Range should not be confused with radius of action—the distance a plane can fly and return to base without refueling. For more specific data, which takes into consideration the differences between series, see p. 748.

GLOSSARY

GLOSSARY*

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AAB	Army Air Base
AACS	Army Airways Communications System
AAFAC	Army Air Forces Antisubmarine Command
AAFIB	Army Air Force in Great Britain
AAG	Air Adjutant General
ABDACOM	American-British-Dutch-Australian Command
ABDAIR	Air Commander, American-British-Dutch-Australian Command
AC	Air Corps
AC/AS	Assistant Chief of Air Staff
A/Cdre.	Air Commodore
ACFC	Air Corps Ferrying Command
ACM	Air Chief Marshal
AC/S	Assistant Chief of Staff
ACTS	Air Corps Tactical School
Actv.	Activation
AD	Air Depot
ADC	Alaska Defense Command
ADP	Airport Development Program
AEF	American Expeditionary Force
AFACE	Assistant Chief of Air Staff-5
FACT	Assistant Chief of Air Staff, Training
AFAEP	Assistant Chief of Air Staff, Plans
AFAFC	Ferrying Command
AFATC	Air Transport Command
AFCAS	Chief of Air Staff
AFCC	Air Force Combat Command
AFDAS	Deputy Chief of Air Staff
AFDMR	Directorate of Military Requirements
AFDOP	Directorate of Personnel
AFMOP	Directorate of Organizational Planning

* In usage the original meaning of code names frequently becomes corrupted.

AFPMP	Military Personnel Division
AFRDB	Directorate of Bombardment
AFRIT	Directorate of Individual Training
AFROM	Movements and Operations Division
AFSC	Air Force Service Command
AFSHO	Office of Air Force History
AG	Adjutant General
AGF	Army Ground Forces
AGO	Office of The Adjutant General
AGWAR	Adjutant General, War Department
AI	Airborne interception
AIPO	American Institute of Public Opinion
AL	American Liaison
ALUSNA	United States Navy attaché
AM	Air Marshal
AMMISCA	American Military Mission in China
AMSEG	Cable designation for Asmara Headquarters Traffic
ANZAC	Allied naval task force for protection of South Pacific route, February–March 1942
AOC	Air Officer Commanding
Aquila	Tenth Air Force Headquarters
AQUILA, FORCE	Advanced bombing detachment for China- Burma-India theater
AR	Army Regulation
ARCADIA	Washington conference, 20 December 1941–14 January 1942
AS	Air Service
ASC	Air Service Command
ASTS	Air Service Tactical School
ASV	Air to surface vessel
ASW	Antisubmarine warfare
AS/W	Assistant Secretary of War
ATC	Air Transport Command
ATFERO	Atlantic Ferrying Organization
ATIS	Allied Translator and Intelligence Service
ATSC	Air Technical Service Command
AVG	American Volunteer Group

AVM	Air Vice Marshal
AWPD	Air War Plans Division
BB	Battleship
BC	Bomber Command
BLACK, JPB	U.S. Joint Board plan for seizure of Dakar
BLUIE EAST 2	Angmagssalik, Greenland
BLUIE WEST 1	Narsarssuak, Greenland
BLUIE WEST 8	Sondre Stromfjord, Greenland
BOLERO	Build-up of American armed forces in the United Kingdom
BR	Task Force Britain
CAA	Civil Aeronautics Administration (Authority)
C/AAF	Chief of Army Air Forces
C/AC	Chief of the Air Corps
CAIRO	Task force for defense of Egypt
C/AS	Chief of Air Service; Chief of Air Staff
CATF	China Air Task Force
CCRC	Combat Crew Replacement Center
CCS	Combined Chiefs of Staff
CG	Commanding General
CINCAF	Commander in Chief, Air Force
CinCPac	Commander in Chief, Pacific
CM	Cable message
CMTC	Combined Military Transportation Committee
CNAC	China National Aviation Corporation
C/NO	Chief of Naval Operations
CO	Commanding Officer
Com.	Communications
Comdr.	Commander
Comdt.	Commandant
COMINCH	Commander in Chief, U.S. Navy
Comp.	Composite
ComSoPac	Commander South Pacific
CPS	Combined Planning Staff
CRYSTAL	Weather station

THE ARMY AIR FORCES IN WORLD WAR II

C/S	Chief of Staff
CSA	Chief of Staff, U.S. Army
CSigO	Chief Signal Officer
DC/S	Deputy Chief of Staff
DD	Destroyer
Det.	Detachment
D/P	Directorate of Personnel (British)
ED	Engineering Division
EDATC	European Division, Air Transport Command
EDC	Eastern Defense Command
ESF	Eastern Sea Frontier
ETO	European Theater of Operations
ETOUSA	European Theater of Operations, United States Army
FC	Ferrying Command; Fighter Command
FEAF	Far East Air Force
FEASC	Far East Air Service Command
FIVE ISLANDS	Task force for defense of South Pacific ferry bases
FO	Field Order
GASC	Ground Air Support Command
G/C	Group Captain
GCI	Ground controlled interception
GHQ	General Headquarters
GHQAF	General Headquarters Air Force
GO	General Order
GOC	General Officer Commanding
GSF	Gulf Sea Frontier
GYMNAST	U.S. Joint Board plan for seizure of Casablanca
HALPRO	Bombing detachment for China-Burma-India theater
HB	Heavy bomber
IFF	Identification friend or foe
Incl.	Inclosed; inclosure

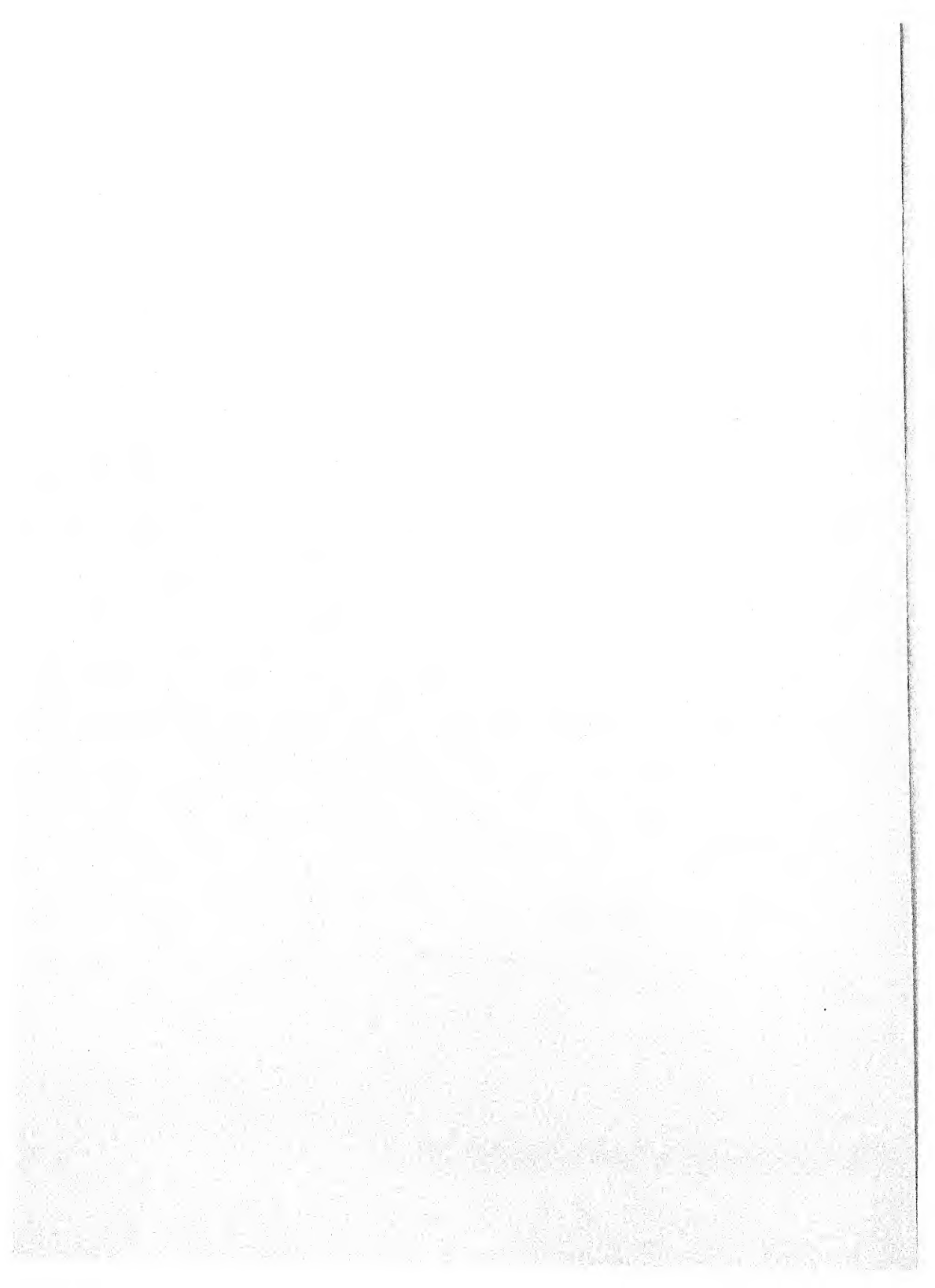
Ind.	Indorsement
Intel.	Intelligence
Intr.	Interrogation
I&S	Intelligence and Security
JAC	Joint Aircraft Committee
JANAC	Joint Army-Navy Assessment Commission
JB	Joint Board
JCS	Joint Chiefs of Staff
JPC	Joint Planners Committee
JPS	Joint Planning Staff
JSP	Joint Staff Planners
JUNIOR	Twelfth Air Force
JUSSC	Joint United States Security Committee
LB	Light bomber
MA	Military attaché
MAB	Munitions Assignments Board
MAG	Marine aircraft group
MAGNET	Plan for U.S. troops to replace British troops in Northern Ireland
MAP	Ministry of Aircraft Production
Mat.	Materiel
MB	Medium bomber
MD	Materiel Division
MEW	Microwave early warning
MID	Military Intelligence Division
MILID	Military Intelligence Division
MIS	Military Intelligence Service
NACA	National Advisory Committee for Aero- nautics
NADATC	North Atlantic Division, Air Transport Command
NANCF	North Atlantic Naval Coastal Frontier
Necal	New Caledonia
NEI	Netherlands East Indies
OCAC	Office of the Chief of the Air Corps
ONI	Office of Naval Intelligence

THE ARMY AIR FORCES IN WORLD WAR II

OPD	Operations Division, War Department General Staff
ORS	Operational Research Section
OTU	Operational training unit
PAA	Pan American Airways
PAAF	Pan American Air Ferries, Inc.
PINETREE	Headquarters, VIII Bomber Command, High Wycombe
PM	Prime Minister
POA	Pacific Ocean Area
POPPY	New Caledonia Task Force
PPI	Plan position indicator
PRO	Public Relations Office
RAAF	Royal Australian Air Force
Rad.	Radiogram
RAF	Royal Air Force
RAFDEL	Royal Air Force delegation
RAINBOW No. 5	Joint basic war plan (1941) for offense in Europe and defense in Pacific
RCAF	Royal Canadian Air Force
Recon.	Reconnaissance
ROUNDUP	Plan for invasion of western Europe, spring 1943
SADU	Sea-Search Attack Development Unit
S/AS	Secretary of Air Staff
SE	Single engine
Sec.	Section; Secretary
SHADOW 82	Plan for Army Air Forces to understudy and relieve Royal Air Force fighter units in Northern Ireland
SLEDGEHAMMER	Plan for emergency landing in western Europe, October-November 1942
S/N	Secretary of Navy
SO	Special Order
SOS	Services of Supply
SPENAVO	Special Naval Observer Group
SPOBS	Special Observer Group, U.S. Army

SSA	Sea-Search Attack
SUMAC	Australia
SUPER-GYMNAST	Projected plan to combine United States and British plans for seizure of Dakar, Casablanca, and Tunisia
S/W	Secretary of War
SWPA	Southwest Pacific Area
TAG	The Adjutant General
TE	Twin engine
TF	Task force
TM	Technical manual
TORCH	Plan for Allied landings in North and Northwest Africa, November 1942
TR	Training Regulation
TRIGGER	Plan to set up a model air defense sector in America with Royal Air Force aid
TURBINLITE	Plan to provide Army Air Forces night fighter squadron with Royal Air Force equipment and training
USAFBI	United States Army Forces in British Isles
USAFFE	United States Army Forces in Far East
USAFIA	United States Army Forces in Australia
USAFIB	United States Army Forces in Britain
USAFISPA	United States Army Forces in South Pacific
USFOR	United States Forces
USSBS	United States Strategic Bombing Survey
VHF	Very high frequency
W/C	Wing Commander
WDC	Western Defense Command
WDGS	War Department General Staff
WIDEWING	Eighth Air Force Headquarters at Bushy Park
WPD	War Plans Division, War Department General Staff
X	Task force to move heavy bombers to Australia

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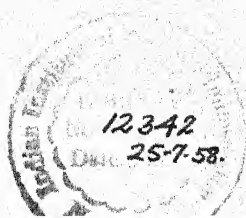
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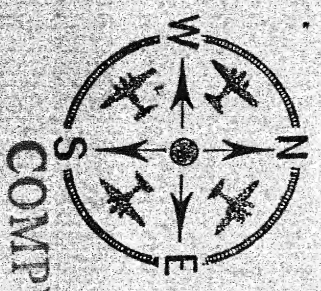
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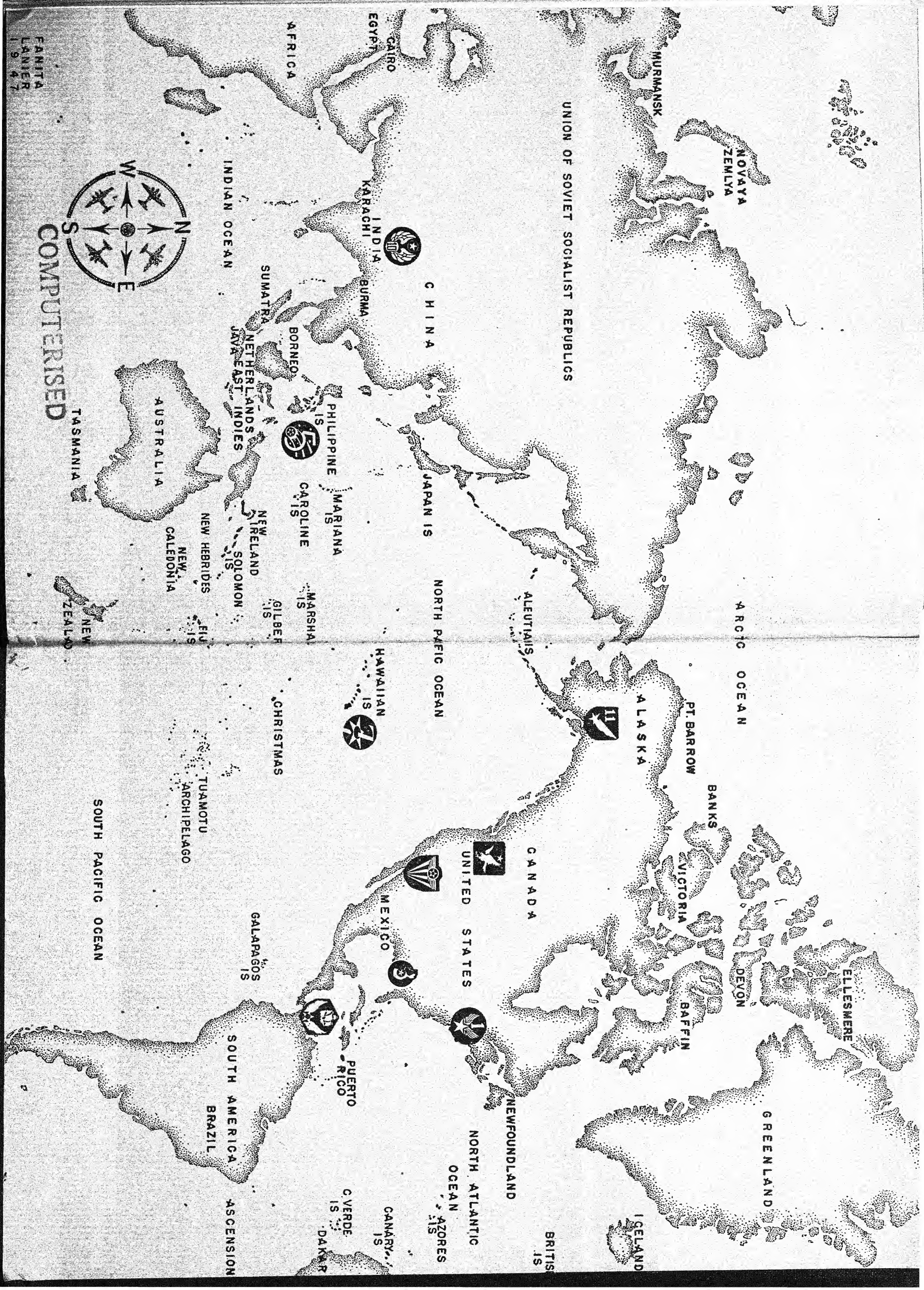
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CAROLINE IS

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INDIAN OCEAN

SUMATRA

BORNEO

NETHERLANDS
JAVA
EAST INDIES

NEW IRELAND

SOLOMON IS

NEW HEBRIDES

NEW CALEDONIA

AUSTRALIA

TASMANIA

NEW ZEALAND

SOUTH PACIFIC OCEAN

TUAMOTU
ARCHIPELAGO

GALAPAGOS IS

SOUTH AMERICA
BRAZIL

ASCENSION

PUERTO RICO

MEXICO

CANARY IS

VERDE IS

DAKAR

NORTH ATLANTIC OCEAN
AZORES IS

CANADA

UNITED STATES

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